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NEWS IN BRIEF

IBM 370 Lease Has No Overtime Charges

WHITE PLAINS, N.Y.—IBM has announced a 48-month term lease plan—with no overtime charges—in addition to standard lease and purchase plans now being offered.

The plan covers the virtual storage central processors of System 370 models 125, 135, 145, 158 and 168 and their associated multisystem units, channels, consoles, power and coolant units.

The monthly charge under the term lease plan is the same as the standard monthly lease charge for these machines, but the machines can be used for an unlimited amount of time at no additional monthly charge, the firm said.

IBM said the new plan will benefit customers with high utilization of data processing equipment. Users of teleprocessing and data base data communications systems will now be able to run their applications round-the-clock at no added rental cost.

The term lease plan is being announced for the U.S. and Canada.

Hawaii to Double-Check Election Results Programs

HONOLULU – Who checks the election results here? The same program that produced them in the first place. A loophole in auditing? Yes, and according to Gerald L. Mann Jr., director of the city's Department of Information Systems, it's one quite common in other cities he's contacted.

But a legislative bill being proposed here promises to end nightmares of undetected program errors.

Currently, election results are processed by an outside computer service. The only audit made on the outside program is to rerun data from selected precincts using the same program and computer.

If the state legislature approves the proposal, the city will write its own Cobol election results program which will be run using selected precincts to check on the outside firm's program. The program will also be run on a different computer.

On the Inside This Week

Rating High on CAI

Students in the "Model Schools for Model Cities" program in Los Angeles have their own terminals to converse with a time-sharing system. The students averaged a gain of 1.4 years in mathematical reasoning ability after the first four months of using computer-assisted instruction, school officials said. Story on Page 3.

'Packaged' B700s Have S/3-Like RPG, Key Entry

By Don Leavitt
Of the CW Staff

DETROIT – Burroughs has filled the gap in its small computer series with two B700 systems. Introduced here last week the B700s have from 32K to 48K bytes of core and fall between the already available L8000 Series minicomputers and the B1700.

Described as a "perfectly valid" alternative to the smaller IBM System/3, the B700 combines some of the design concepts of the B1700 with an ease of operation Burroughs feels is necessary for the less sophisticated user.

The B700s provide operator communications with the system through the direct entry keyboard similar to that on bookkeeping machines. Other media, however – disk, tape, cassettes, paper tape and punch cards – are available for large-scale jobs.

RPG Like S/3's

RPG, similar to IBM RPG II, and Cobol are available as languages, but Burroughs has developed and is stressing a series of business management systems (BMS), packaged programs for specific businesses, for those users with no inhouse programming capabilities.

In the B700's microprogrammed processors, hardwired logic is replaced by interpreter micro instructions. A new feature called Dynamic Interpreter Configuration, which is controlled by the BMS programs, is said to optimize the efficiency of the interpreter micro instructions so that main memory is allocated only to those resources needed for a given program.

This results in the largest possible area of memory made available to the user programs and increases system throughput, the firm said.

The interpreter also contains the System Control Program, which monitors and directs systems activities. It includes an interrupt system, an imbedded I/O manager, and all the "soft" controllers for the I/O processors.

Since most of the functions of the usual I/O controller are performed by software, Burroughs explained, the principal task of the hardware device is to translate from the I/O media's code to Ascii code which is the internal machine code, and vice-versa.

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Money Men Reappraise 360, Find $ Value Zero in 1978

Special to Computerworld

NEW YORK – Peat, Marwick, Mitchell & Co., a major auditing firm employed by several large third-party leasing firms, has reappraised its policies on residual values of System 360s and related peripheral equipment, according to its Management Information Letter 1973.3.

The letter, signed by J.P. Cummings, said that third-party computer leasing companies must reduce the asset value of 360 equipment and peripherals to zero not later than Dec. 31, 1978. At the same time, the value of all enhancements should also be totally recovered, the letter noted.

The firm recommended as an intermediate step that 360 values after Dec. 31, 1975, should be carried at no more than 15% to 25% of the original cost.

In addition, the leasing companies are asked to consider their customer base, marketing capability, the terms of leases and the accuracy of the company's financial forecasts. To adopt a maximum undepreciated cost of 25% by Dec. 31, 1975, a company must be strong in each of these items, according to the auditing firm.

Peat, Marwick, Mitchell & Co. includes Itel Corp., Computer Investments Group, Data Processing Financial & General and Rockwood Corp. among its clients.

Users Not Directly Involved

The evaluation guidelines in the management letter need not necessarily apply to users of purchased equipment. The utility of the equipment does not change, and if the user has a known workload so that he will not be remarketing the equipment, there need be no direct impact on his evaluation of the equipment.

One of the curiosities of the report is that enhancement programs, which have been developing the power of the 360, appear to be regarded as a contributory cause of the change in policy, apparently considered as a liability rather than an asset.

The auditing firm commented that some lessors have been compelled to step up their enhancement programs by installing technologically advanced peripheral equipment to make the systems more attractive to new or old lessees, and that this involves the problem of remarketing the peripherals replaced.

Apparently based upon this deduction the firm said peripherals which enhance the system should be assigned a maximum useful life of five years, provided it is neither beyond 1978, nor beyond the remaining useful life of the system to which it is connected.

The policy regarding 360 enhancements which do not consist of peripherals, or which do not cause replacement of other owned equipment – such as the CHCS Model 30 Accelerator, or the over IBM limit add-on core systems – appears not to be directly covered in the statement.

However, it would appear that any attempt by a Peat, Marwick client to get its approval for such enhancements retaining value beyond 1978 would have to be very well-documented.

Peat, Marwick, which has previously been approving straight-line depreciations

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Private Line Charges

Bell Asks Rate Revision

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T has asked the Federal Communications Commission for approval to revise its private line rates to compete with the specialized common carriers. The rates would affect more than 19,000 private line users.

Can Bell cost-justify ita proposed changes? Story on Page 21.

Under the proposal Bell would set up a two-level rate structure based on high-density and low-density routes. For users along high-density routes, monthly rates would drop from $3/mile to 85 cent/mile, while rates in low-density areas would be increased.

Bell defines high-density areas as geographic centers where it has the facilities to terminate 1,200 or more voice channels from its L-carrier transmission routes. These 382 high-density centers in many cases coincide with the areas where the specialized carriers such as Microwave Communications Inc. plan to provide service. All others would be classified as low-density centers.

The high- and low-density rates would apply to interstate voice-grade private line services of more than 25 miles. On smaller "short-haul" links AT&T proposes higher rates based on several phased increases.

How Dense?

While the exact effect of the proposed rate restructuring will depend on the density classification of the user's routes, some of the increases will be tied to higher end termination charges. Current private line users pay a service terminal charge at each end of their links. This charge is now $10/mo for "foreign" ex-

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Bell Asks FCC to Approve Private Line Rate Revision

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change customers and $15/mo for other private line users.

The service terminal charge will be split into two rates that would apply at each end of the user's line. A channel terminal charge would cost $35/mo for a high-density location; $15/mo for a low-density location; and $3/mo for a short-haul link.

In addition, the user would pay a proposed station terminal charge of $25/mo on both high- and low-density locations. $10/mo for FX short-haul; or $15/mo for non-FX short-haul lines.

Under the present private-line tariff no. 260, all private line users pay the same monthly rates according to distance. The rates are $3/mile for the first 25 miles; $2.10/mile for the next 75 miles; $1.50/mile for the next 150 miles; $1.05/mile for the next 250 miles; and 75 cent/mile for each additional mile.

This system would be scrapped in favor of three new monthly rates. The user would pay 85 cent/mile for high-density routes; $2.50/mile for low-density routes; and $3/mile for short-haul routes. The short-haul monthly rate would later be raised to $3.75/mile, AT&T said.

For users in a low-density area, the higher rate would apply only for the distance required to the nearest high-density area. And the lower high-density rate would apply for the remainder of the route, so long as the lines remained in high-density areas.

On a typical 250-mile route a user who now pays $488/mo would pay $333/mo if he were in a high-density area at each end of his link. If the same user included one high-density and two low-density links in his network, the rate would be $518/mo, according to AT&T estimates. The specialized carriers would charge about $367/mo for full-time service and $304/mo for part-time service along the same route, a Bell spokesman estimated.

How Much Pain?

Although the private line charges will be restructured, overall changes will not cause undue hardships for the typical user, AT&T said. The crossover point at which a network charges under the proposed rates equals charges under the existing rates is at about 3,000 miles, AT&T said.

AT&T said it would also change its private line tariff to provide for the "resale" of its lines by value-added carriers such as Packet Communications Inc.

Stating that it would not oppose the PCI application to the FCC [CW, Feb. 7], an AT&T spokesman said the value-added applicant could operate as a non-regulated customer if the tariff change is approved by the FCC. The PCI application had asked for status as a regulated carrier.

If the tariff changes are approved, the Bell System will provide intercity links to the specialized common carriers under contractual agreements, an AT&T spokesman said.

If the FCC approves the AT&T changes, it will take at least six months before the rates could go into effect, an FCC source estimated.

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Money Men Reappraise 360, Find $ Valuation Will Be Zero in 1978

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with residual values up to 10 years, said the accounting policy had been based on five occurrences during 1972. These are:

- A failure by leasing operations generally to achieve the profits projected during 1971 and 1972.
- The cost of enhancement programs particularly in the peripheral equipment area.
- The introduction of IBM virtual memory systems.
- An apparent reduction in the IBM cycle-introduction, production, phase-out-cycle on System 370 compared with that of System 360.
- A consultant's forecast that by the end of 1975 fewer than one-half of the system 360s installed today will remain operational.

Peat, Marwick recommended that if the implementation of the policy results in a forecasted loss in any future period for lessors, the prospective losses should be spread out over the profitable years preceding the period of anticipated losses by the provision of reserves, and that if the implementation of the policy results in a forecasted cumulative loss through Dec. 31, 1975, the loss should be recognized immediately as an additional charge for depreciation.

User Sues Burroughs on B4700

CHICAGO – Burroughs Corp. has been sued by a user who alleges that its B4700 system failed to operate properly and that software support was lacking for the system.

Advance Schools, Inc., a Delaware corporation, filed its $1 million damage suit in the Circuit Court of Cook County charging that Burroughs failed to live up to the "warranties and representations" it made in selling the system and that Advance "was required to expend substantial sums of money in an effort to correct the situation caused" by this failure.

The basis for claims of damages comes from the downtime resultant from the unit, according to the suit.

What appears to have happened is that Advance Schools, unhappy with the performance of its computer, withheld payments allegedly due Burroughs even after Burroughs had acted to rectify the situation.

Advance's contention was that Burroughs owed it credits against the lost time and efforts.

In an attempt to get Burroughs to respond to its demands Advance sent a brief of a potential lawsuit to Burroughs, hoping the firm would allow Advance the credits it sought in return for the dropping of the suit.

On Jan. 26, Burroughs then sued Advance for $130,000 for "premature, wrongful termination" of its contract.

Advance agreed to upgrade to the B4700 system under the terms of the original contract (except for a higher monthly rental), the Advance suit said.

But, the suit continued, "contrary to all the defendant's warranties, representations and promises, the aforementioned electronic data processing equipment was not rendered fully operational and capable of performing all electronic data processing required in connection with plaintiff's operations."

CW Opens Washington, D.C. Bureau

WASHINGTON, D.C. – *Computerworld's* new Washington, D.C., bureau has been opened in Suite 1129 of the National Press Building (Zip 20004).

The office, under the direction of E. Drake Lundell Jr., will concentrate on congressional and agency activities that affect the computer user and the computer industry. These activities will include such items as privacy debates, procurement activities, federal standards actions and governmental applications that might have wider application to the computer community at large.

The telephone number for the new office is 202-638-0901. The office can also be reached through Telex number 89-544.

All news releases sent to the new office should also be sent to the newsdesk at CW's Newton, Mass., headquarters office.

Lundell will continue to edit CW's computer industry section in addition to his duties as chief of the Washington Bureau. Molly Upton, in the Newton office, will be assistant editor of the industry section of the paper in addition to her duties as editor of the financial section.

Burroughs Packaged B700s Have System/3-Like RPG, Key Entry

(Continued from Page 1)

The B700 is a single program machine. However, an interrupt-and-resume feature allows the operator to break into extended jobs for inquiries for an urgent management report. Pertinent data from the original job, including memory and register contents, is stored on disk cartridge. When a priority job is finished, the information is retrieved and reloaded and the system resumes processing at the point of the interrupt.

Part of the BMS software includes parameter-controlled Audit Entry programs which check direct entry information for accuracy of preparation and transmission to the system. Additionally, Audit Entry provides a written law for auditing purposes.

AE300 Off-Line System

As volumes increase, one or more free-standing Burroughs AE300 programmable systems can be added. Input through the AE300 keyboard is verified against a control program before being recorded on tape cassettes for subsequent loading into the B700.

Two central processors are available. The B705 processor speed is .5M cycle/sec. Main memory read/write cycle time is 1 µsec for two bytes.

The B711 processor speed is 1M cycle/sec. Main memory read/write cycle time is again 1 µsec for two bytes.

Disk cartridge drives available with the B700 have an average data access time of 80 msec including latency, transfer rates of 1.55 Mbit/sec and capacities of 4.6M bytes or 9.2M bytes.

The systems may also include magnetic tape cassette drives, on which each cassette may contain 240,000 characters. In addition, users may include one 9-channel, 800 bit/in. conventional mag tape unit.

Available line printers range from a chain printer which prints at 90 line/min to a train printer which goes at 400 line/min with a 48-character set.

Two 80-column card readers may be attached to a B700 system; 96-column card equipment includes a simple reader or a full-blown reader/punch with up to six output stackers. This unit can be used off-line as a data recorder or a multifunction card machine.

Paper-tape reading and punch peripherals compatible with all industry standards are also available.

The B700 system sells for between $42,000 and $110,000 or leases for $950 to $2,600/mo. Average sale price, Burroughs estimated, will be about $50,000.

The BMS software will be separately priced as will be the training. Perhaps typical of BMS prices is a system for wholesalers and distributors which will have a one-time cost of $7,500. Training will cost $2,000.

CAI Students Want More

LOS ANGELES – The Los Angeles Unified School District is working to solve the problem of underachievement and absenteeism for 3,000 students in Watts junior and senior high schools, through the use of computer-assisted instruction (CAI).

The key to the program is individualism. One time-sharing system converses directly and individually with 32 students at once. Each student is addressed by name.

In turn, each student tells the computer, via his terminal, what subject he wants to study and even how difficult he wants the material to be.

Results of their progress with the CAI programs are stored for later analysis by the teacher. Periodic examinations show dramatic success for students taking remedial mathematics, the only CAI course offered the first year of the program.

Their average grade level in mathematical reasoning increased 1.4 years, after four months of CAI. Their computational skills increased eight months, also after four months of CAI. At this point, attendance had improved over 20%, school officials said.

Terminal classes, which this year include reading and language arts, generally last 15 to 30 minutes and are designed to supplement, not replace, the teacher.

Approximately 80% of the total computer time is devoted to remedial exercises. Twenty percent of the time is for enrichment exercises.

The program involves six schools. Each one has a staff of five: one teacher-coordinator and four teaching assistants, and is equipped with a Hewlett-Packard 2000C. Peripheral equipment includes 96 teleprinters and 96 CRT terminals.

The school district finances 30% of the program's costs. The Housing and Urban Development Agency (HUD) pays the rest through a Model Cities Program.

Cobol Conformance Review Chance Lost

Special to Computerworld

WASHINGTON, D.C. – A chance for a general review of the situation regarding implementors' conformance with Cobol specifications was lost recently when the Conference on Data Systems Languages (Codasyl) Executive Committee abandoned attempts to organize the annual general meeting. The abandonment apparently occurred because no member of the executive committee volunteered to make the arrangements.

Control of Codasyl, however, is not affected by the dropping of the annual meeting. Codasyl control remains in the hands of the executive committee which elects its own chairman annually at the beginning of the year, unlike corporations where the directors are elected at the annual meeting.

The meeting, which was to have taken place here May 15, would have reviewed various recent developments. In addition, it would probably have considered the situation of Cobol conformance in the light of the recent abandonment of the Ansi audit routines which were made available in 1968.

Bob Barton, Honeywell Information Systems, assured the 1971 annual meeting that the audit routines were working and that they would make the Cobol language "more transferable." He also told the meeting the X3 committee would review on a quarterly basis conformance reports from all the implementors, based upon the use of the audit routines, and that these reports would be made public, if possible.

However, the current chairman of the operative X3 Committee recently reported that the audit routines are not working, and that the task may never be completed.

Worldwide Spy Net on the Horizon

WASHINGTON, D.C. – The Defense Intelligence Agency plans to begin running tests this spring on an Arpanet-like system to link all of the defense-sponsored intelligence agencies into one worldwide network.

The system, which carries the title of Experimental Analysts Station, will use PDP-11/45s as a front-end device for wide range of different computers, but primarily for Honeywell and IBM systems used in the network.

The hardware in the system will be completely transparent to the user, Air Force personnel have said, which will allow a user with IBM equipment to call for information from other computers in the network without any problems.

Presently, Bunker Ramo is configuring the system and is writing the software for it – software which the developers at Rome Air Development Center say will also be transparent to the user.

One of the objectives of the network, besides allowing for the internetting among the different systems operated by Defense spy agencies is to allow for distributed data bases.

For example, in the system any computer or even one of the 11/45s will be able to access information kept in 2314 disk units at any other center in the network without going through the computer at that site.

To update information in one of the local data bases, however, the user would have to go through the computer at that site.

Ideally, the system will also be completely hardware transparent to the user, the developers indicated.

They want to make it possible for any analyst using the system to be able to call for information without having to use any special protocols or have any programming knowledge in order to access a computer at a different site.

Full Communications Processor 'Best Bet' for Terminal Mixing

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. – Data communications users should consider getting true communications processors as preprocessors for their systems and not just controllers, according to Maj. Glen Vincent of the Defense Intelligence Agency.

The major reason the user needs a full communications processor, he told the Computer Caravan/73 recently, is because it gives him more flexibility in his terminal selection task and lets him mix more terminals in his communications systems than do many front ends of the controller type.

In addition, it also gives the user some flexibility when he wants to replace his host computer with another host machine.

"With the true processor," he said, "the host machine can be replaced without having to replace the communications processor or network."

For this same reason, Vincent said the user was often better off getting a communications controller from some firm other than the mainframe supplier, so that if the mainframe was replaced the entire communications network would not have to be.

In addition, Vincent noted the true front-end processor could relieve the central computer of a great deal of overhead work, adding this could run up to 40% of the central processor's time in some installations.

"In some cases where the CPU is overloaded, this savings in CPU time might be a reason in itself for going to a communications processor without any of the other factors having to be considered," he stated.

However, he noted, most central computers are today being underutilized, so this factor might not be the deciding one in present installations.

A further reason for getting such a system, he claimed, could be that the communications processor allows the user to do some things a controller will not allow.

For example, it could ease a user's connection with a network of other systems, he said, and it would also be used for some local work such as printing operations or local small-scale processing.

In addition, a communications processor allows a user to offer the people using the system some extra services while the host computer was down for maintenance or for some other reason.

Reliability, Cost Brought One User To Independent Line

WASHINGTON, D.C. – Most of the reasons for using independent peripheral equipment revolve around the price savings the user can get from the independent's gear when compared with the same piece of equipment from IBM.

But at least one user at the Caravan here got into the world of the independents because of the increased reliability available with that type of equipment.

Dave Whitestone, DP manager at Potomac Electric Power Co., stated that both reliability and the cost factor led Pepco toward independents.

In 1969, he said, the firm was experiencing reliability problems with its IBM 2401 tape drives.

Pleasant Dreams

After an evaluation, Pepco turned to the Ampex tape drives that replaced the 2401s. In addition to providing Pepco with savings of more than $5,000 yearly, he indicated the increased reliability with the Ampex units, when compared with the IBM ones, would have been enough to justify the switch even without the savings.

The only problem with the Ampex drives, he noted, was when the firm upgraded to a 360/50 from a 360/40 and IBM claimed it could not run its diagnostics on the new system from the Ampex tape drives.

But after some negotiating, Pepco was able to convince IBM to use the independent drives for the installation checkouts.

Happy with the tape drive experiment, Pepco then replaced IBM large-core store with extended memory units from IBM. With this move, the utility found it could get twice the capacity, and twice the speed, for only a 50% increase in price.

Today the organization presently has independent disk drives in addition to the tape drives and memory units – both single-density and dual-density units.

Rail Freight Yard Routes Take Direction From Mini

SELKIRK, N.Y. – The Penn Central Railroad's Alfred E. Perlman Yard is one of the busiest freight train classification yards in the U.S. And two minicomputers make it one of the safest.

The minis verify the route a switching engine will take inside the yard, and prevent other engines from being on that route or conflicting routes.

The freight yard is divided into three yards: receiving, classification and departure. Individual freight cars, ready to leave for their destinations, are shunted onto the appropriate track, where they join other cars going to the same place.

When a train is to be formed, a yard conductor in a tower overlooking the yard directs one of the switching engines to a classification track. He has the cars on that track transferred to the track in the departure yard where the train is being assembled.

The yard conductor must select the route the switching engine takes to get from the classification yard to the departure yard. It is this route the Data General Nova computer verifies and secures.

In practice, an operator selects one of the yard's 55 routes, and the Nova, through hard-wired connections to the track switches, checks it to see if it is available. If there already is a train on the route, the yard conductor can either select an alternate route or wait until the train is off that route.

If the route is clear, the dispatcher pushes a button and the mini activates that route by moving the switches into the proper position and locking them. The Nova then checks to make sure all the field hardware responded correctly to the command. If a device did not respond, the mini notes it as an alarm condition and notifies the yard conductor.

If another yard conductor wants to use the same route, the mini will detect the locked switches and tell him the route is unavailable. As the switching engine pulls a line of cars over a switch, the computer detects the movement and releases that segment of track back to the yard conductor's control.

Childbirth Data May Set Stage For Study on Mental Diseases

WASHINGTON, D.C. – A comprehensive 14-year study of childbirth is nearing completion but the six million pieces of data stored on computer tapes may set the stage for a second study on the causes and cures for such diseases as mental retardation and cerebral palsy.

The aim of the original study, sponsored by the National Institute of Neurological Diseases and Stroke, was to see how the events of pregnancy affected the child's later physical and mental development. Information on 56,000 mothers and 40,000 of their children during the first eight years of life was stored on a computer.

One of the early findings included the relationship of the mother's weight gain to the baby's birth weight which is known to affect the baby's future health; doctors no longer restrict a mother's weight gain during pregnancy as they did prior to this study.

When the study is completed, the data will be used for other research projects. Doctors believe there are clues hidden in the childbirth data for the cure and prevention of neurological diseases such as mental retardation and cerebral palsy.

Mini Heralds POWs' Return

IRVINE, Calif. – When the first returning prisoner of war stepped off the plane at Clark Field, a TV camera focused in on Capt. Jeremiah A. Denton Jr. of Virginia Beach, Va. But the instantaneous biographical information about Denton came from half a world away where a minicomputer sent subtitle descriptors across the nation's TV screens.

Hours before this historical arrival, some 590 names had been read into a Varian 620. Full names, rank, service and related information were provided by the government. But individual order of arrival could not be anticipated.

As the visual and audio signals came off a communications satellite, a keyboard operator at the TV studio in New York City listened to the name announced at Clark Field. He immediately keyed in the first three letters of the last name, "DEN." Out came the full text on Jeremiah Denton, mixed electronically with the signals from the Philippines, and transmitted nationwide by ABC network.

News Wrapup

Airport Subway System 'Stalls'

SEATTLE – The Sea-Tac airport automated subway system [CW, Oct. 25], ready to roll since late 1972, has stalled on the tracks of legality, waiting for several contract disagreements to be settled.

The Port of Seattle commissioners have agreed to pay $5.9 million for the underground transit system. But Westinghouse Electric Corp., which built and installed the highly computerized system, wants an additional $650,000. Most of the difference stems from a $400,000 disagreement on contractual "escalation costs."

That disagreement is coupled with ongoing, still unsettled negotiations between Sea-Tac and the airlines over higher lease fees the airport wants to charge. The two-loop subway system serves two satellite passenger terminals; the airlines are reluctant to pay increased fees for the use of the satellite centers.

No starting date for the Sea-Tac system has been predicted.

3,000 Dads 'in Debt' Due to Keypunch Error

SACRAMENTO, Calif. – A keypunch error in the county DP center here resulted in 3,000 erroneous bills to fathers who had already made monthly child support payments.

According to county officials, the computer was making its February run to check for all payments due in January. But an operator punched in "March" instead of "February" so the computer checked for all February payments.

Naturally, there were no February payments yet, so the computer sent delinquency notices to 3,000 fathers.

The district attorney urged all fathers who received the notices, which threatened legal action within five days, to ignore them.

Czechs Ask Hnwaiians for Conversion Help

HONOLULU – The city Department of Information Systems here received an unexpected request for programming help recently – from Prague, Czechoslovakia.

The Czechoslovakia Institute for Regional Planning wrote to its counterpart here for help in converting its Symap program (which prepares data for plotting) from 360/40 OS to DOS.

The conversion was necessary, the Czechs wrote, for "financial and time reasons," due to a reduction from 256K to 110K.

Honolulu sent the Czechs a copy of its DOS version of Symap along with source listings, notes on the conversion and "alohas."

Milos Stepanek, director of the Czech Institute, wrote that he learned Honolulu had the program he needed through Harvard's Laboratory for Computer Graphics and Spatial Analysis.

Dnrtmouth Computer Achieves 99.8% Uptime

HANOVER, N.H. – Computers sometimes take scheduled vacations for maintenance, etc., but hopefully, they rarely take unscheduled vacations, i.e., breakdowns. The Kiewit Center computer at Dartmouth College is no exception.

In fact, "of the 500 hours of time-sharing scheduled for the month of December, 99.8733% was available to users. The lost time totaled 38 minutes," according to Dr. Thomas E. Kurtz, director of the center.

In all of 1972, the Dartmouth Time-Sharing System missed only 60 hours of its 6,000 scheduled hours.

System uses ranged from homework problems to computer chess games to financial projections for the college's administration.

Computer Prediction of Heart Disease Seen

NEW YORK – A heart specialist predicted that within 10 years computers will be used to predict the onset of heart disease.

"I believe," said Dr. Charles A. Bertrand, chairman of the cardiovascular committee of the New York State Medical Society, "that these predictions will be accurate in the majority of patients above the age of 40."

Bertrand's prediction was just one of 30 placed in a time capsule by the New York Heart Association here.

Will the prediction come truc? One prediction made 10 years ago at a similar ceremony did come true – a successful human heart transplant.

DP Specialist Named Railroad Man of Year

CHICAGO – A computer specialist has been named the railroad industry's Man of the Year for 1972.

James W. Germany was selected by *Modern Railroads* magazine because "the emergence and growing effectiveness of comprehensive, sophisticated, computerized management information and control systems" is revolutionizing the industry.

Germany supervised the installation of a $22-million railroad computer system for the Southern Pacific. The SP offered the system free to other railroads and it is now being used by the Union Pacific, is being installed on the Burlington Northern and is used with modifications by the Missouri Pacific.

'Cross at the Green and Not in Between'

PORTLAND, Ore. – In a world of law enforcement in which the computer plays a significant role, fugitives must watch every step they make – literally.

John R. Outlaw was cited for jaywalking here and was held while police made a routine check of their files.

The computer came up with an outstanding warrant issued over a year ago charging Outlaw with larceny in Kansas City, Mo. He was held awaiting extradition proceedings.

Editorial

Off-Site Emphasis

IBM has served notice it will no longer provide CPU time for production work at its data centers.

At the same time it has renewed its commitment to support users with program testing at IBM installations. While attributing the move to the CDC settlement, the IBM announcement is also recognizing the increased sophistication of the user.

The prospective user is demanding more and more authoritative proof that the system he is contemplating will actually perform "as advertised."

If IBM data centers now plan to provide more off-site support to the user with program testing, benchmarks and other systems work, all users will benefit.

'So If We Don't Like the Way Things Are Going, We Can Always Stop Playing.'

Manage Yourself First Before Directing Others

Working in a computer center would be fun if it weren't for the people.

Understanding people requires comprehension of the other person's idea of what will benefit him most – his private notion of what constitutes his own best interests. (See Gellerman's prize-winning American Management Association book, *Motivation and Productivity.*)

A person's view of his own psychological advantage depends upon his assessment of the environment, particularly as to power ("To what degree can I control it?") and reward ("Is it benevolent or harsh?").

For example, someone who expects much power over his environment and high rewards will probably drive hard for achievement. Another, also expecting much power to influence his environment, but with serious doubts about its rewards, will probably fight hard for money. A third, with low expectations as to both power and reward, will probably settle for a steady job.

True to Yourself?

Each of us is thus always following a sensible strategy to be oneself in the kind of world he thinks he lives in. It is more a matter of striving to be a certain kind of person than it is a question of having certain things.

If your computer operators, for example, believe they do not have a significant, self-respecting role, this may surface indirectly as excessive wage demands (because pressuring management recovers some of the dignity that has been denied).

To be an effective manager, support your subordinates psychologically. Standards and measurements, for example, are tools and not ends in themselves. Accordingly, subordinates should work in their own way (so long as the work gets done). Programmers who see their own ingenuity in the results are usually more productive than those who contribute little but their obedience to instructions.

Management

By Frank Greenwood, PhD

This freedom from specific direction does not produce loafing – if general goals are set and subordinates help set them, actually participating in the decisions. This philosophy, which requires that you trust your people to work properly, usually results in high productivity (which is mostly controlled by your subordinates).

Freedom is usually more possible for systems analysts and programmers than it is for data conversion people and computer operators, however, because the technology tends to strap us to very specific requirements in operations.

The alternative – exercising control through authority – emphasizes job descriptions, standard methods, quota, budgets, etc. This philosophy usually results in greater direct control for you but at the price of lower productivity.

The antagonism of subordinates is a normal problem of leadership. Using your power with care and justice is usually the appropriate answer.

Since much depends upon our informal authority and because we can expect little help from the formal authority of our position in the hierarchy, the capacity to generate informal authority is important. Before promoting a programmer to lead programmer, for example, observe whether his associates now turn to him for advice and guidance. If so, he has established his informal authority and you probably risk little promoting him because you would simply formalize what is already a fact.

Possession of power often creates an appetite for more power, since power helps you achieve your own psychological advantage. Power plays soon consume your power, though.

It is seldom wise to invoke authority and to use compulsion, because it suggests that you are a weak leader. Using your ability to persuade is much better, since it builds organizational strengths.

One exception is probably when your authority is directly and openly challenged by a subordinate (typically in association with some kind of ultimatum). That may be the time to concentrate every ounce of authority you can on crushing the challenge.

Before you can manage others. you must manage yourself. Whenever – usually in times of urgency and stress – you are arbitrary, abrupt or less than considerate of the feelings of subordinates, of computer users or even of superiors, you are not managing yourself.

This does not mean a manager is timid or weak. He does indeed make the tough, difficult decisions, but he does so only after evaluating his own motives and feelings. Then he acts so as to achieve the installation's proper purposes and objectives, and not, say, to put a software programmer in his place.

Directing the activities of others is a complex part of the management function, combining leadership, motivation and guidance. It probably begins with the idea that you cannot direct others until you are willing to rely on them, to trust them.

(Frank Greenwood is director of the computer center at the University of Montana.)

Letters to the Editor

Giving Facts Clearly Or Grinding the Axe?

As a long-term reader of *Computerworld*, I have recognized a very strong bias against IBM in the news columns and editorials. The net value of the publication to me, however, is such that I have ignored this bias to a large degree.

I think it is obvious that Alan Taylor has had little or no experience as an IBM user. In fact, most of the criticism of IBM I detect comes from sources which certainly should be highly suspect.

I would like to make three very specific points. First, the Feb. 14 editorial urges IBM users who are dissatisfied with IBM performance to contact the Justice Department and inform them of instances where they have "been injured by illegal or pressure marketing tactics."

In all fairness it might be useful for CW to request users of all manufacturers to make an effort, since those of us who have used competitive equipment as well as IBM's know well the routine and comparative performances in the industry.

It is very probable that the Justice Department does not have the same insight. In addition, CW might urge IBM users who have been more impressed with IBM performance and can cite significant successes which were accomplished by IBM pressure.

In short, one would believe that CW is interested in presenting the facts clearly whether they favor IBM or not. Instead, it appears that CW clearly has an axe to grind, although the motive is not clear.

The article concerning the Telex-IBM suits on Page 29 of the Feb. 14 issue refers to sources that indicate what "may well be the IBM strategy."

Is it too much to ask of an objective reporter the general nature of that news source? I can understand reluctance to name names but one ought to know if the source is a Telex executive, a Justice Department attorney, an IBM competitor, etc.

The lead article of that issue on IBM maintenance markups indicates the same tendency to obscure the source of analysis and information which the reader has a right to know.

I believe an unbiased content analysis of CW would reveal that these two illustrations are not unusual in reporting on IBM.

My comments concerning CW are, of course, from the user's point of view and I have to recognize that CW may serve other interests.

If CW is not primarily focused on the EDP user, then I think we users have a right to know what interests are represented by CW.

Finally, I would like to add my voice to those who support a bundled IBM. For customer service, for sales effort, for maintenance support, non-competitive activity is reason for many to reject some of the data processing giants who like to make a profit at the user's expense while denying the users the opportunity to deal with the companies with whom we wish to do business.

No knowledgeable person believes that IBM "walks on water," and CW's articles, such as the article on maintenance, are very beneficial to the IBM customer. It would be more valuable if we could trust the source.

W.R. McCartin
Phoenix, Md.

Re: Point one, "IBM performance," is not accurate. The editorial states "illegal or anticompetitive marketing practices." Computerworld sincerely hopes that anyone with information beneficial to IBM will volunteer it to the large legal contingent defending IBM. Remember that the Justice Department has already decided what it wants – after all, it initiated the suit. It is now up to either the court or a consent decree type committee to settle the case.

Re: Point two . . . In this specific case, the source of the article is of little importance, as we explain the logic of the premise to the nth degree.

Re: Point three . . . Alan Taylor provided CW with copies of the depositions, IBM documents and other material he used to prepare his story. A bibliography is available to anyone on request. Ed.

How Deep Are DP's Problems?

Misforwarded Letter Sets Off Billing Controversy

The Taylor Report

By

Alan Taylor, CDP

Marilynn D. Evans moved from New York to Massachusetts four years ago. When she moved she gave the Post Office a forwarding address. Even so, she was surprised to receive a letter recently that had been forwarded from her old address.

She noted the letter was not for her, however, but for a Lewis Evans. It had been forwarded to her by mistake so she put it back into the mail.

That proved to be a mistake.

The letter was a bill and was apparently returned to the sender. In time it must have been received in the sender's data processing department. Someone there noted the new address, while ignoring the statement that the bill had been sent to the wrong person. A change of address card was then created and the computer files updated with the erroneous information that Lewis Evans now lived in Massachusetts.

In due time, the computer ran the monthly bills and dunning notices. One bill was addressed to the nonexistent L. Evans of Massachusetts. This was duly delivered by the Post Office to Marilynn Evans.

Although it was not addressed correctly to anyone in the house, she opened the letter. She thought her son might be receiving unsuitable mail and she wanted to know about it. But the letter was not for her son.

It was a bill, claimed to be overdue, for a sewing machine. The sender was Singer Sewing Machines, in Long Island, N.Y.

Again, she returned the letter noting this had nothing to do with her and that there was no L. Evans at that address.

More Letters

But that was only the beginning. The monthly letters continued to arrive. The local Massachusetts Singer branch promised to look into the matter until it realized it was not a local account. The branch told her she would have to work with the New York people.

Already getting annoyed she phoned the Long Island office collect. It refused to accept the charges so no verbal contact was made between the parties involved.

Written contact continued.

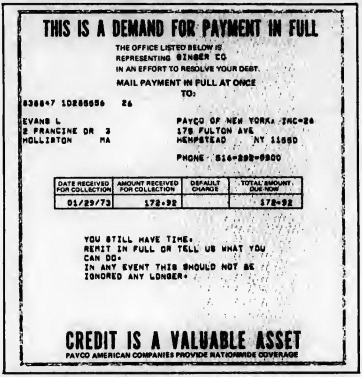
One letter told her that Singer valued her so much it would be glad to extend her more credit for her needs! Needless to say, by this time the last firm she would go to for a sewing machine would be Singer.

Then she just started throwing the bills away.

This was how it stood in January 1973. Then came a new type of letter from another computer system – a debt collection agency.

A copy of the agency's bill is reproduced in Figure 1. The document:

- Unequivocally claims the addressee owes the specified amount.
- Talks about a "nationwide" service of the debt collection agency and by implication threatens the credit rating of Marilynn Evans, through the nationwide service.
- Demands that the payment itself be turned over to the agency, thus leaving the payee with no evidence of payment to any authorized person.



THIS IS A DEMAND FOR PAYMENT IN FULL

THE OFFICE LISTED BELOW IS
REPRESENTING SINGER CO
IN AN EFFORT TO RESOLVE YOUR DEBT.

MAIL PAYMENT IN FULL AT ONCE
TO:

838847 10285656 26

EVANS L
2 FRANCINE DR 3
HOLLISTON MA

PAYCO OF NEW YORK, INC-26
178 FULTON AVE
HEMPSTEAD , NY 11550

PHONE 516-292-6900

DATE RECEIVED FOR COLLECTION	AMOUNT RECEIVED FOR COLLECTION	DEFAULT CHARGE	TOTAL AMOUNT DUE NOW
01/29/73	172.92		172.92

YOU STILL HAVE TIME.
REMIT IN FULL OR TELL US WHAT YOU
CAN DO.
IN ANY EVENT THIS SHOULD NOT BE
IGNORED ANY LONGER.

CREDIT IS A VALUABLE ASSET

PAYCO AMERICAN COMPANIES PROVIDE NATIONWIDE COVERAGE

Figure 1. Document sent to Marilynn Evans from debt collection agency demanding payment for bill she never incurred.

What Marilynn Evans will do now, I do not know. She will have to do something because the credit rating which is now being attacked belongs to her even though the bill never did. She does not think the fact that no L. Evans is at the address given will stop the credit-rating computers.

> *. . . "Our systems can be managed so easily by machines that human supervision of the actions taken on behalf of people has dwindled until, in many computerized systems, it is now nonexistent."*

After the way her address was put into someone else's file she expects the credit-rating computers to blame any person who happens to live at that address.

And she doubts whether anyone at the debt collection agency will listen to her, anymore than Singer did. So she is a troubled woman.

And her trouble is our profession's trouble.

For it is our systems that make unverified updates. It is our computer systems that encourage the use of turnaround documents that deny evidence of demands made. It is our systems that are so easily abused by selectively ignoring some input or by pushing it onto some other office, etc. And it is our systems that can be managed so easily by machines that human supervision of the actions taken on behalf of people has dwindled until, in many computerized systems, it is now nonexistent.

And that is our professional responsibilty. When we estimate the savings in manpower involved in computerizing applications – when we say that applications are suitable for computerization without requiring additional supervisory manpower – then we are making technical judgments.

Yet, do we have the right to make these technical judgments? Do the observed facts, as opposed to the theoretical possibilities which we started out with some 20 years ago, support the thesis upon which these judgments rest? If the facts that surround us today do not support our contentions of past years, then our responsibility is grave indeed.

As far as I can see, the facts have not yet been determined. Each time I probe matters a little deeper I come up with more, rather than less problems.

We recently saw the second level of the mail-billing problem where the mails had been blamed for unnecessary finance charges [CW, Feb. 21]. But, instead of the mails, it turned out the delay in posting money received was the real culprit.

Similarly, dunning letters were always thought to be a problem of slow payers. The idea that an address file could be updated from an undelivered letter, and that claims of mistaken identity could be ignored was unthinkable. Yet it happened. And it did not happen in an innocent, unsophisticated company either, but in one of the computer companies (Singer Business Machines).

Supervisory weakness, probably due to inadequate appreciation of the need for supervision of data processing applications, appears to be the problem in the Evans case.

Whether it is the problem or not, I do not know. Perhaps when we turn over this problem we will find another one.

But I do know that each time new levels are reached in investigating problems, the data processing operation appears to be more involved. How deeply the problem really lies with data processing we have yet to discover.

Vacation Costlier Than You Think

The Readers Respond

While the debate goes on about poor billing practices and other data processing ethical problems, some light has been shed on the situation of Melvin Tolhurst and his Bankamericard [CW, Dec. 6].

L. Brazinsky, manager of operations for BT Credit Co. Inc., which does the billing for Bankamericard, wrote Tolhurst:

"Your account (4250-132-002-723) is in billing cycle 3 which is produced on the 9th of each month. Our production schedule calls for statements to be collated with the applicable sales drafts and mailed to our cardholders within one week of the billing date. Our cardholders then have 25 days from the billing date to make payments without incurring a finance charge on the purchase balance . . ."

In other words, if payment is received at BT Credit by the 4th of the month (25 days from the 9th of the preceding month) there would be no finance charge assessed.

Tolhurst replied:

"The second paragraph of your letter . . . refers to 25 days your cardholders have to make payments without a finance charge. However, your production schedule claims seven of the cardholders 25 days, and the mails probably claim another two.

"This leaves the cardholder with 16 days in which to make payment, unless he chooses to pay by mail, in which case he has 14 days, assuming optimal mail delivery.

"If this poor cardholder chooses to take a two-week vacation, he is bound to pay for it in Bankamericard finance charges, unless his payment miraculously coincides with your payment schedule."

Professional's Viewpoint

370/125, by Limiting Peripherals, Presents Step Backward for User

By Marshall E. Maynes
Special to Computerworld

Many users like to have a small computer to back up a larger one. Sometimes the larger one is in the same installation, sometimes it is not — but the concept of having computer backup is as valuable in 1973 as it was in 1963.

Data processing professionals or societies wishing to express views on professional matters in this column are requested to write the Professional Viewpoint Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

In 1963, indeed, the backup characteristics of computers were often the decisive point upon which sales were won or lost.

Since the introduction of the 360 series, backup capabilities have often come to be taken for granted. True, unless the appropriate core was present, one might not be able to use the actual programs. But at least a user would be able to connect the same type of devices to both of his systems, and so be able to move disks and tapes around as needed. This was a major advance in the state of the art.

With this ability to control their environments, moreover, more and more users now take advantage of it. They buy some of the equipment which they should be able to use for a number of years — tapes, disks, printers. Many 360 and 370 users now own their own 2314/2319 disk-type drives.

They expect to be able to attach them to their own new, smaller computer system, to back up the larger central system. This could be done with the 360 family. There is no technical problem in doing so.

But it cannot be so readily done with the new 370/125!

On the 370/125 there is a 3333 disk unit. It comes with two spindles for 3336 disk packs. IBM customers can add one or two more spindles for a total of four spindles, or 400M bytes. This may well be enough disk to handle all the user's I/O needs, including virtual memory paging.

But while the disk system has the capacity the user needs, it may not be the type he needs. Many users, for instance, will want to transfer 2316 packs between systems. This cannot be done on the 370/125.

The tape situation is similar. The 370/125 supports only 3411 and 3410 drives. The user with his own tapes is therefore being driven to make a new investment.

The most obvious reason for this move by IBM is that there are many independent peripheral manufacturers who can supply faster, more reliable and less expensive devices of the 2314/2319 type and tape equipment.

The independents have enhanced the 2314/2319 concept with engineering advances in order to attain this superiority. These include the use of dual density and voice coil.

The original concept of modularity offered by the IBM 360 and 370 systems was, and is, a sound concept which gave the users the ability to tailor their own systems to their own needs. They could change processors without changing peripherals.

IBM's current approach, if the 370/125 is indicative, is not only that the mainframe manufacturer shall be able to dictate how peripherals will be connected, and whose equipment will be used with its computers, but IBM wants to be able to tell the user just which type of peripheral he can have.

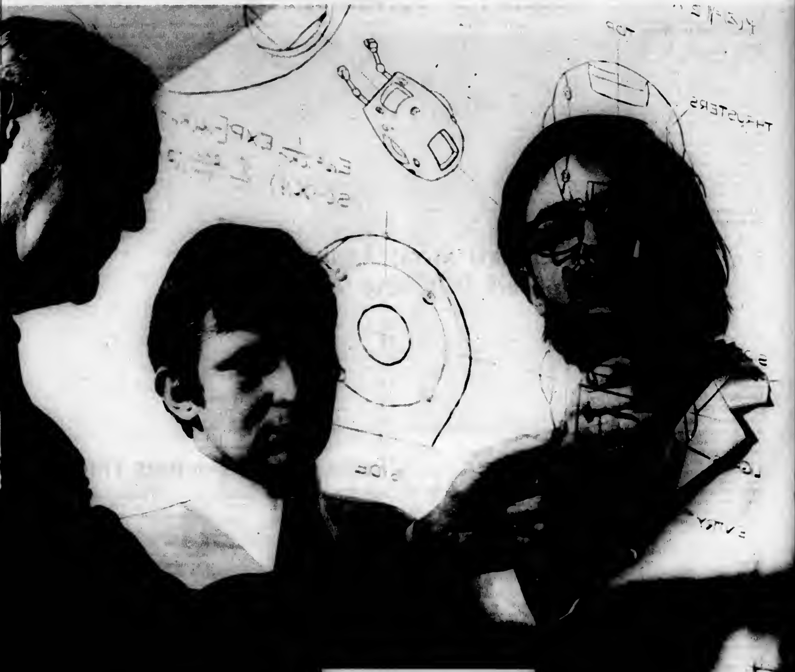
From the user's point of view, restricting the type of peripherals, and so downgrading the usefulness of the various computer systems being marketed, is not a fair or a reasonable restriction. It is certainly not an advance in the state of computers, and I see it as a retrogressive move.

Marshall Maynes is a systems specialist for Calcomp.

Where to Put the Firehouse?

WASHINGTON, D.C. — A computer will help this city determine the optimum locations for three prospective fire stations.

The computer will use information regarding local traffic patterns and "fire demand zones" and will also take into account future expansions in the city.



Random Notes

Naval Center Giving Away GPSS Version for CDC 6600

WARMINSTER, Pa. – CDC 6600 users can run General Purpose Simulation System problems on their equipment with NGPSS/6000, a version of GPSS-V developed for the Navy by Norden division of United Aircraft. The new implementation runs under the Scope 3.3 operating system, Norden said.

A copy of the new simulation package, coded in Cobol and requiring 18K words to assemble and 14K words to execute, is available free to users who send their request and a magnetic tape to the Naval Air Development Center, here.

'Minicomm' Monitor Extended To Support Local, Remote CRTs

NEW YORK – The Minicomm communications monitor for DOS/360 users has been enhanced by Programming Methods to support CRT terminals, including IBM's 2260 and 3270 units, and all the GTE video terminals, as well as the IBM 2740 hard-copy device.

Remote support under the multiprogramming version of Minicomm takes 4.5K to 8K bytes. The non-multiprogramming version requires a 24K 360/22, 25 or 30 and costs $8,000. The MP version costs $10,000. Programming Methods division of GTE Information Systems is at 1301 Avenue of the Americas, 10019.

Interactive Adds Data Base Of Corporata Sales, Purchases

WALTHAM, Mass. – Corporate planners, marketing managers and financial analysts can access detailed information about dollar volumes of sales and purchases of U.S. companies, through a new time-sharing service offered by Interactive Data Corp.

The service also provides information about more than 500 products or services utilized by the companies at their various sites. In addition, users may interface the data from this new service with data from other databanks on the Interactive system. Interactive is at 486 Totten Pond Road, 02154.

Data-Tek Adds New Services

PHILADELPHIA – The Data-Tek time-sharing service has implemented two new capabilities for its subscribers: an APL compiler that can be accessed from a broad range of terminals and supports a workspace of 87K bytes; and an Xtran-to-Fortran IV conversion system.

The new APL interfaces with terminals having the extended APL character sets, but with conventional keyboards as well. Strikeovers to duplicate special APL characters are avoided through the use of mnemonic codes, Data-Tek explained, from 3401 Market St., 19104.

Interactive Store/Retrieve

'Basis-70' Solves Special User Needs

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Users with unique needs in interactive storage and retrieval of data in various forms may be able to get help through the Battelle Automated Search Information System (Basis-70) run by Battelle Memorial Institute.

Basis-70 was developed by Battelle to meet its in-house needs and has been operational since mid-1970. Its capabilities are impressive, growing and available to outside users, but only under very closely defined conditions.

Battelle is a non-profit organization interested, among other things, in learning more about data storage and retrieval. Therefore any new Basis-70 projects must add to the institute's knowledge and experience, rather than simply utilizing capabilities that already exist.

Currently there are almost 30 data bases loaded into Battelle's CDC 6400 under Basis-70, covering many areas. The largest base thus far is one of 200 million characters, which covers three years of abstracts from the National Technical Information Services (NTIS) operation in Springfield, Va.

Basis-70 itself is the nucleus of a system that is tailored for each user. The tailoring in one case provides the ability to scan a data base, or – more accurately – its index, for key word matches, near-matches or a Boolean combination of matches.

Output of the stored data is normally a printout on the user's CRT, teletypewriter or on a Battelle high-speed printer.

The initial capability of retrieving data (by field if the records are organized in that fashion) is being augmented, however, by support for arithmetic operations on the stored data, the results of which can be displayed or printed.

More exotic applications currently include an interface, through a CRT terminal, of a computerized data file, a related microfiche file and the user. With this integrated approach the user may retrieve and work on data from the computerized file, and update the microfiche data being presented by keyed-in entries.

As they are keyed-in, these corrections are shown on the CRT screen, overlaying the out-of-date data on the microfiche image, but they are also stored on a disk file and shown every time that microfiche record is called to the screen.

Ultimately, if the number of corrections grows large enough to slow the effective use of the existing microfiche records, the records themselves should be recreated in updated form and the computer-based correction file erased, a Battelle spokesman said.

For another Basis-70 project, Battelle has implemented a graphics operation linked to an accessible data file. This version of the system allows the user to extract data from the file and plot it on a hard-copy unit or create a magnetic tape for later projection on a Stromberg-Datagraphix device, which shows the graphic output on a CRT screen and copies it onto 35mm film.

Since Battelle has to tailor Basis-70 for the user, the institute also handles the indexing and conversion of the user's data base. The completed data base can be accessed at 10 or 450 char./sec over dial-up telephone lines.

Battelle is at 505 King Ave., 43201.

'DBD' Cuts Across Applications To Check Data Base Duplication

MIAMI – Installations which have built up multiple data set listings under Cincom System's Total and other data base or file management systems can now identify and therefore control data redundancy, through cross-referencing reports generated by the Data Base Directory (DBD) package from Eastern Airlines.

Total itself allows its users to list all of the data fields related to a specific application, or list a limited subset of the complete list for programmers and analysts working on a particular portion of the application.

But duplication of fields from application to application is not yet identifiable under the basic Total system, Cincom qualified. DBD, on the other hand, produces as many as 11 different reports which aid the user in clarifying the relationships of elements to like elements, elements to data sets, and data sets to programs.

Thus it provides a dictionary of data terms with cross-referencing to synonyms even across application lines.

Summarize Data Elementa

DBD reports can summarize data from a variety of sources as well as from different application areas. Through DBD a Total user can list data sets related to operations controlled by Informatics' Mark IV or any other file management system, an Eastern spokesman explained.

Thus, he added, DBD is an enhancement package that removes data base documentation responsibility from the application programmer.

DBD is made up of two separate jobs. An update and edit program maintains the user's data base, and the report program extracts data from that base for the reports. The edit routines include the flagging of erroneously coded maintenance transactions, and the printout of both old and new conditions of any data record changed by a valid transaction.

Written in Cobol, DBD can be installed by the user, Eastern said. The one-time license fee is $3,000 for the source modules, JCL decks and samples of input documents and supporting documentation.

Eastern's DP Sales office is at Miami International Airport, 33148.

'Route/Guide' Monitors Trucks

CINCINNATI, Ohio – Distributors or others with large fleets of vehicles operating between a network of cities may be able to reduce their transportation costs and save time for their planning staffs with the Route/Guide package from Management Decisions Development Corp. (MDDC).

The program determines the best over-the-road routes between cities and prepares a guide, complete for each pair of cities with total distance and/or travel time. It can also provide mileage breakdowns by state, and detailed routing in terms of either connecting highways or intermediate cities.

Route/Guide operates in either on-line interactive or a batch processing mode. It is designed to carry enough information to allow effective judgments on travel time, distance and cost tradeoffs. The user can, for example, explicitly include in the optimization the time or cost incurred in passing through enroute cities.

The software permits users to classify roads independently within each state by speed, cost or other factors for the trade-off studies.

New cities and road links as well as changes in travel times, costs and mandatory routings are accommodated. The output of the system, useful for planning of the routes themselves, is intended to interface directly with related applications including driver payroll and state mileage reporting.

Route/Guide is written in Cobol and except in the optional on-line module, it operates under DOS/360 in a minimum of 32K bytes.

Since the system is modular, the user purchases only those elements he needs. The base module costs $7,500. The on-line function adds $1,500 to the price.

MDDC is at 680 Northland Road, 45240.

NCSS Has Big Plans for T/S Net

By Don Leavitt
Of the CW Staff

NORWALK, Conn. – National CSS (NCSS) is acquiring more 360/67s, but is moving up to 370 gear as well. It is beginning to implement an Arpa-like communications network and is actively studying the possibility of adding a Multics system from Honeywell to its facilities.

The result of all this activity, according to NCSS Vice-President Richard Bayles, should be a remote-computing service that is more reliable and more flexible than the present one.

File Sharing Extended

The company has upgraded its Sunnyvale, Calif., data center to a dual 360/67 and will be adding two more dual 67 systems to its Stamford, Conn., location in the next three months. The dual configurations, he explained, allow file sharing by concurrent users and provide system resource redundancy in case of hardware failure.

The new communications facilities, utilizing programmed minicomputers rather than conventional multiplexers and CPU front ends, will aid in balancing line loads and in finding alternate paths between terminal and CPU, all without user intervention or knowledge, Bayles said.

NCSS has signed a development agreement with Honeywell in connection with the recently announced Multics time-sharing system. But Multics will actually be installed "only if Honeywell lives up to its commitments to make it a commercially viable system," Bayles said.

Developed over seven years at MIT, Multics is a virtual memory system that includes hardwired "rings" or layers of accessibility that should prevent unauthorized disclosure of programs or data better than more conventional password systems.

Syatem of Rings

Multics also has an operating system spread across several rings. The central core is essentially untouchable but users may modify or create system commands to suit their purposes, without imposing the new commands on any other user.

Implementation of a good level of Cobol is one of the key commitments faced by Honeywell, according to Bayles. True compatibility with the GCOS operating system – used by the Honeywell 600/6000 series CPUs from which Multics was developed – is another area of concern, he said.

There are "chinks" in Multics' ability to provide real uninterrupted service in the event of a system failure, he added.

The new network is expected to provide a common set of protocols between varied CPUs that NCSS may install, but it will not be extended to allow users to attach their own CPUs directly to the network, as they may now do on Tymshare Inc.'s Tymnet network, also based on Arpa principles.

NCSS will be using modified DEC PDP-11s as its Interface Message Processors (IMP). Arpa itself utilizes Honeywell 316s and 516s; Tymshare uses modified Varian 620s. With minis at both ends of the communications link users will be able to transmit at 9,600 bit/sec over voice-grade lines, and will not be required to use broadband circuits as Arpa users now do, Bayles said.

The prototype equipment is now being tested with "very local traffic" within the Stamford data center.

A 370/145 will be going into Stamford in June, primarily to test some of the peripherals and software support planned for the 370/168, scheduled for delivery in October. When fully operational, the 168 is expected to replace one of the dual 67s. The 145 may be used to support remote-batch work, once it has finished its role as a test bed for 168 options, Bayles said.

Cross-Assemblers Improve PDS Runs

NASHUA, N.H. – Sanders Data Systems, Inc. (SDS) has new assembler programs for the Series 800 programmable terminal systems.

The programs execute approximately 20 times faster than the company's original DOS/360 PDS Assembler, and 10 times faster than the Sanders original OS/360 Assembler, the firm's spokesman said.

Both the new OS/360 PDS and DOS/360 PDS assemblers, designed to run on IBM 360s or 370s, enable the PDS programmer to convert assembler language source programs into machine language code compatible with the Sanders PDS terminal.

Both assemblers are free with the Sanders 804 terminals – which cost $6,980, with a lease price of $202 to $245/mo – and with the 810 cluster of terminals, priced at $3,387 per terminal and a lease range of $94 to $115/mo per terminal.

Sanders is at Daniel Webster Hwy., 03060.

COMMUNICATIONS

Data Briefs

IEEE Group to Investigate Man-Machine Interface Facts

SILVER SPRING, Md. – The IEEE Standards Committee has announced the formation of a man-machine interface subcommittee.

Designated Project P353, the IEEE Computer Society subcommittee will draft display data terminal standards for characteristics such as character size, resolution, brightness, colors, flicker rate and cursor representation.

Users interested in participating as members should contact Gerald C. Schutz, subcommittee chairman, c/o IEEE executive secretary, Box 639, 20901.

Datran Plans Switched Service

VIENNA, Va. – Datran plans to provide its first switched data services to eight cities in its projected nationwide network by early 1974.

Initial service will be provided between St. Louis and Houston with intermediate stops at Kansas City, Tulsa, Oklahoma City, Fort Worth, Dallas and Austin, Texas.

The customer terminal interface unit, which will be required to link all Datran customers to its network, will be supplied by Burroughs.

FCC Carrier Decision Appealed

SAN FRANCISCO – The FCC decision that paved the way for MCI and the other specialized carriers was challenged in the U.S. Court of Appeals here recently.

The National Association of Regulatory Utility Commissioners and the Washington Utilities and Transportation Commission told the court the FCC decision allowing the new carriers to provide service should be overturned.

In addition to the two regulatory bodies, MCI, Datran, Southern Pacific Communications Corp., the FCC, the Justice Department and other interested parties were present. A decision on the appeal is not expected for several months.

Ann Arbor Adds Keyboards

ANN ARBOR, Mich. – Ann Arbor Terminals, Inc. has announced its Series KB200 free-standing keyboards.

The Model KB200A provides a 53-key ASR33-compatible alphanumeric keyboard arrangement and generates 7-bit parallel Ascii output at TTL logic levels.

The Model KB200B is identical, except that separate cursor, numeric, and function keys are also provided.

An optional configuration, the Model KB200B-1, is intended for external synchronous applications.

Prices for the series are $250 for the KB200A, $300 for the KB200B and $350 for the KB200B-1. Ann Arbor Terminals is at 6107 Jackson Road, 48103.

IBM TP Additions

Vtam Should Aid 370 User

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM's introduction of the 3704 programmable front-end processor and the Virtual Telecommunications Access Method (Vtam) [CW, Feb. 7] has added new capabilities primarily for users of 370s.

One of the major changes allows either the 3704 or 3705 to operate remotely from the mainframe site. In these configurations a second front end must also be installed at the central site. Another capability, previously introduced by several independent front-end suppliers, lets a user operate in both emulation (270X) mode and native mode to develop applications programs. Both of these developments are available only to 370 users.

The concurrent emulation and NCP mode is achieved with the partitioned emulation programming extension of NCP/VS.

Vtam contains two major elements to direct the 3704 or 3705 processors through the Network Control Program (NCP). The first is the teleprocessing manager which logically connects and disconnects terminals from application programs. The teleprocessing manager also informs the console operator of network status, logs net data and initiates restarts.

Good Connections

The Vtam program interface connects the application programs with the teleprocessing manager. The interface executes macro instructions to direct the acquisition, reading, writing and checking of data from connected terminals. This interface also provides asynchronous processing so an application program can continue while it waits for a request to be completed.

The Telecommunications Access Method (Tcam) message control and message-processing interfaces offer queued access to Vtam for OS/VS users. This capability for applications where direct transaction-oriented processing is not required allows the program to proceed as if the entire TP network were a data set, according to IBM.

Current Tcam application programs are said to be able to utilize the Vtam/Tcam interfaces "with minimal or no coding changes."

Vtam allows the user to interface new applications into an existing network. When a user at a terminal requests a connection to an application program, Vtam indicates the log-on request, and the connection is made if the program has been conditioned to accept it. Terminals can be dynamically connected and disconnected from applications during program execution.

OS/Tcam or OS/VS Tcam are available for local 3704 or 3705 use with the NCP but remote features can be supported only with Vtam, according to IBM.

The NCP edits messages and controls their flow between the mainframe and the terminals. The 3704 and 3705 can operate with a wide variety of terminals including the 2740, 3735 and the 3270 CRT. Both the front ends will continue network handling of terminals during "short-term shutdowns" of the mainframe.

By the Numbers

Among the added features of NCP/VS are manual dial operation when automatic calling is not available, and two-channel support for multiprocessor (MP) configurations of the 158 and 168.

In an MP system, a single 3705 with two Type 2 channel adapters is attached to the two CPUs when operating under OS/VS. Another feature allows switched network backup. When a private line is down, the console operator at the front-end processor can manually call a terminal attached to an IBM 3872 or 3975 modem.

HIS Upgrades 58

WELLESLEY HILLS, Mass. – Honeywell has added multiple communications capabilities to its small Model 58.

The Multiworkstation system allows the use of up to four terminals for remote or local information retrieval, inquiry and data entry.

The system combines an asynchronous multiline controller with Honeywell's DOS II to allow multistation routings and batch processing.

The multiline communications controller is designated the MLC050 and uses 8-bit Ascii code at speeds up to 1,200 bit/sec. Manual or auto answer can be used and the system is compatible with standard RS 232C interface modems.

To support a multiworkstation configuration, the user must have a Model 58 with 10K of storage, a DSS 058 disk subsystem with 5.76M bytes, a 100 card/min reader, 100 line/min printer, terminals and the MLC050 controller.

The controller will be available in the second quarter of 1973 for $12,000 or $285/mo.

Specialized Carrier Provides 100 kBit/Sec Data Channels

DENVER – Western Telecommunications Inc. (WTCI), one of the specialized common carriers, is providing the U.S. Navy with 100 kbit/sec data channels to train its pilots in air combat techniques.

The system was developed for the Navy by Cubic Corp. and uses software simulation to indicate a hit or miss by particular weaponry.

Data of 100 kbit/sec and other circuits is furnished by WTCI to the van-type structures housing the CPUs (Control and Computation Subsystem [CCS] and the display console located at Yuma, Ariz., Marine Corps Air Station. Three Xerox Sigma 5 computers perform the major computational processing of telemetry and tracking information.

A 50 kbit/sec cable data link connects the CCS van to the Display and Debriefing Subsystem (DDS) van. One DDS visual display presents a quasi three-dimensional view of aircraft maneuvering. A second real-time video display provides timing and status information including air speeds, "G" forces, weapon selection, aircraft type and similar data. Data processing "hit" or "miss" decisions are presented to the viewing instructors.

A remote DDS console is located at the aircraft's home base, Miramar Naval Air Station in California. The 50 kbit/sec data circuits from Yuma to Miramar are transmitted on the WTCI high-capacity long-haul trunk recently authorized by the Federal Communications Commission.

The 100 kbit/sec circuit was chosen as the most effective information transfer rate. The guaranteed bit error rate is one in 10^6, although the expected rate is better than one in 10^7, WTCI said.

The data link between the CCS and the DDS vans furnished by WTCI is a short cable running at 50 kbit/sec. The data sets on the cable and the microwave are also part of the WTCI service. GE 521 modems are used for 100 kbit/sec transmissions and 401/421 modems for 50 kbit/sec speed.

ICA Finalizes Plans For Boston Meeting

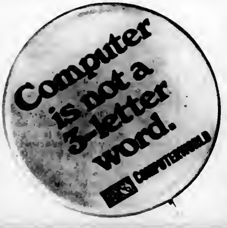
BOSTON – The 26th annual conference and exposition of the International Communications Association (ICA) will be held at the Sheraton-Boston, May 14-17.

Dr. Jerome B. Wiesner, of the Massachusetts Institute of Technology, will deliver a speech titled "Human Communications" and Sebastian A. Lasher of the Office of Telecommunications Policy will speak on "The Functions and Policies of OTP."

Other scheduled speakers and topics include D.E. Gourley, vice-president of marketing, Datran, on "Data Communications" and R.A. Kuehn, president of RAK Associates, on "Communication Management – Is It Possible?"

An international carriers panel and a panel on domestic satellites are also scheduled.

Information is available from J.D. Martin Jr., National Steel Corp., 700 Chatham Center, Pittsburgh, Pa. 15219.



Certification Said to Hurt Users

DETROIT – A certification program that would allow direct connection of approved non-carrier equipment to the phone network would benefit a few users only, according to AT&T board chairman John D. DeButts.

Speaking before the Detroit Economic Club, DeButts described AT&T's "deep concern about the long term consequences" that would result from a certification program.

The average customer will "sooner or later" have to pick up the "revenue requirements" no longer met by customers who install their own terminal gear, DeButts said.

Important questions still remain to be answered about certification, the AT&T chief said. One of these is whether the maintenance of customer-owned equipment can be effectively certified.

In the area of interstate private line competition, AT&T will soon announce details of its two-level rates that will allow it to take "advantage of the economies of scale" of high-capacity routes, DeButts said.

The dual rates will be the first departure from Bell's traditional nationwide average pricing, and will provide proof of AT&T's "intention to compete and compete hard."

Competition in the private line area by the specialized carriers will bring some advantages to "particular users" but this will be done at the expense of the general body of telephone users.

The widest availability of high quality communications at lowest over-all cost will be impaired "in some measure" by the duplication of facilities and division of responsibility that will result from competition, DeButts said.

AT&T is concerned about the recent FCC decision that restricts Bell from using satellites for private line services for three years, the AT&T chairman said.

'Boss' Links Sanders 800, 360s

NASHUA, N.H. – Sanders Data Systems Inc. has added the Boss software packages to its 800 series programmable display packages.

The Boss packages provide the Sanders displays with more hardware and editing features than the comparable IBM 2260 and 2265 systems and at lower cost, the company said.

The software allows the Sanders 804 stand alone and 810 cluster systems to communicate with IBM 360/370 systems in local or remote mode. It provides printing speeds of 30 or 165 char./sec and 110 or 200 line/min; transmission speeds to 9,600 bit/sec; and more editing capabilities with "little or no impact" on the 2260 software.

The Boss software supports optional features of upper and lower case characters, 1,920-char. screen capacity, insert/delete line or character, blink field, back tab and erase to end of field, line or screen.

With the Sanders 731 remote communications controller, Boss allows either synchronous or asynchronous transmission from 1,200 to 9,600 bit/sec. When directly attached to the IBM byte multiplexer channel via the Sanders local channel adapter, transmission speeds up to 50 kbit/sec are possible, the firm said.

Extended Boss employs Ascii line discipline and IBM 2265 system commands in providing the Sanders 804 terminal with many of the editing and validation features offered on the Sanders 620 and 720, as well as the IBM 3270, Sanders claimed.

Both Boss and Extended Boss are free with the 804 stand alone terminal which costs $6,980 or a lease range of $202 to $245/mo.

Boss and Boss Local are free with the 810 cluster of eight terminals, with prices starting at $3,387/terminal or a lease range of $94 to $115/mo/terminal. Sanders Data Systems is at Daniel Webster Highway, 03060.

Australian Bank Installs Honeywell On-Line Data Net

SYDNEY, Australia – The Commercial Banking Company of Sydney Limited (CBC) has installed a Honeywell 6040 computer here as the first phase of its on-line banking system. The computer will be linked to three Honeywell 316 minicomputer satellite systems. Initially these will handle communications to terminals in 104 of the bank's 500 branches.

CBC is using Honeywell's Integrated Data Store data base management system (IDS) to develop a banking system employing customer numbers, rather than separate account numbers, as the basis for all its customer accounting procedures.

"Under this system each customer has only one number, even if he has five or more different accounts with the bank," explained D.J. Smith, administrative officer for automation at CBC.

"The customer number gives the bank a profile of all dealings it has with the customer. This has advantages from the systems angle in that it avoids repetition of information – in marked contrast with account number systems, where a customer's name and address, for example, has to be repeated in the records for each account."

Bank officials can access and immediately update customer accounts through terminals at each bank branch. The computer also will process current accounts, savings accounts, installment loans, savings bank housing loans and master general ledger applications.

The 6040 computer has a 96K-word main memory, a 304M disk storage subsystem, eight magnetic tape units, a card reader and line printer. The three minicomputers in the system, in addition to handling communications, will control the transfer of check data from two Honeywell document reader/sorters and data from visual information projection units.

Delta Data APL Terminal Has 3,000-Char. Memory

WASHINGTON, D.C. – A new APL terminal was added to the Delta Data Systems 5000 family of computer terminals at the Computer Caravan/73 here last week.

The Model 5260 is an Ascii-oriented APL terminal featuring a 96-character set which includes all APL characters and an overstrike capability.

The CRT terminal can display 27 80-character lines at one time and has the ability to store more lines in a "paging memory." Up to 3,000 characters of information can be stored in the buffer at the terminal site.

The average terminal costs $4,500 and leases for $205/mo on a one-year plan or $170/mo on a three-year plan including maintenance.

Bits & Pieces

Terminal Works in On–And Off-Line Modes

SUNNYVALE, Calif. – The Dicom 345 Cassette Magnetic Tape Terminal is designed for both on-line and off-line applications.

In its on-line mode, the CMTT ties in directly with most major minicomputers; as an off-line device, it permits serial modem-to-modem communications at transfer rates of 110 bit/sec and 300 bit/sec (10- and 30 char./sec).

On-line use of the CMTT with computers manufactured by Hewlett-Packard, Varian, Data General and Digital Equipment Corp. is supported by a library of cassette operating system software and "off-the-shelf" interfaces.

Single unit price is $3,300 from 715 N. Pastoria Ave., 94086.

. . . Building a Calculator System

CAMBRIDGE, Mass. – The IW-770 is a fully automated punched card reader that plugs into the I/O connector of Wang 600 and 700 Series programmable calculators, according to the developer, Digital Laboratories.

The reader handles up to 200 card/min and allows stacks of up to 500 cards to be processed without operator intervention.

Any field in the card may be addressed directly, eliminating the need of bringing unnecessary data into the calculator, a spokesman said.

Price of the card reader is $3,850 from 377 Putnam Ave., 02139.

WCS With ID-70 Equals Real-Time

HAWTHORNE, Calif. – The ID-70 Omnirom from Memory Systems, Inc. is a plug-compatible Writable Control Store (WCS) designed for Interdata Model 70 minicomputers.

Using the ID-70, the sophisticated user can, under keyboard and software control, modify all or part of the command structure of his Model 70, including real-time applications, the firm said.

Omnirom is priced at $4,298 for the 1K unit and $5,500 for the 2K version from 3341 W. El Segundo Blvd., 90250.

Unit Takes 'Drawl' out of TI 980A

PORTLAND, Ore. – Users of the Texas Instruments 980A computer can attach a floating-point auxiliary processor for "faster than normal" execution of Fortran and Assembly Language programs, according to a spokesman for Floating Point Systems, Inc.

The add-on processor – utilizing the 980A's auxiliary processor port – operates as though it were a part of the main central processor, performing floating-point add, subtract, divide, multiply, fix and float.

Cost of the companion processor is $16,000 from 3160 S.W. 87th Ave., 97225.

Recording--Part I

Physical Process Employs Flux Change

By John C. Scott
Special to Computerworld

Disks: Nothing But the Truth

Many users lack knowledge of how the hardware within their computer systems operates. A basic understanding of the principles of operation of central processors and peripherals can enable improved selection, troubleshooting and utilization.

This first part of a series on magnetic disks deals with recording and explains how information is written onto and read from disk surfaces.

Despite the fact that most users are constantly worrying about potential disk problems, few adequately understand disk operation to determine a positive course of equipment evaluation or areas of potential trouble.

As for their architecture, disks are made of aluminum substrates approximately 14 inches in diameter onto which is bonded a magnetic medium with recording characteristics similar to those on magnetic tape.

Electromagnetic transducers known as "heads" are used to write data onto and read data from the disk surfaces.

In operation, disks rotate at typical speeds of 2,400 rpm and 3,600 rpm, and the heads aerodynamically fly over each surface making no direct contact. The flying height of heads above the disk is in the 50 µin. to 150 µin. range.

Each head contains a core of magnetic material separated by an air gap directly over the disk surface.

When a current is passed through the coils wrapped around the core, the induced magnetic field magnetizes the local disk surface area.

Thus data is recorded on the surface by controlling the flow of current applied to the head coils.

Recording and Reading Information

Binary information from the CPU arrives at the drive controller in a variety of forms, usually parallel by bit. However, it is recorded on the disk pack in bit serial form.

Thus, the binary information (e.g. 101100) must be encoded or translated into a form suitable for disk storage.

Since the physical mechanism employed in data recording is flux change with respect to time, there must be two information channels: one which is sensitive to flux change timing variations – i.e., a clock; and the channel containing the binary information which has been encoded into variable-length magnetic flux changes.

In the normal process of recording, the encoded binary information controls a write current driver causing current to pass through the head coils.

This, in turn, creates a flux path in the core whose magnitude and direction depend on the current amplitude and polarity. If the magnetic flux is strong enough, saturated magnetic recording takes place.

If the disk is then removed, it contains a series of magnetic transitions recorded on concentric tracks.

These transitions in themselves are meaningless from an information point of view. They require a second information channel, the clock, to have any real meaning.

On readback, the magnetic transitions pass beneath the head and induce a voltage pulse proportional to the speed and the magnetic pattern on the disk.

Since disk packs are designed for volume production, reasonable tolerances must be allowed on all parts. Therefore, through design and cost constraints it is unreasonable to require that the clock and magnetic transitions always occur precisely on time.

Consequently, systems have a window or capture range on either side of nominal clock position. If a magnetic transition falls within this window, it is interpreted and decoded as a "1."

If an error occurs, there probably has been a peak shift from the expected position on the disk, or the amplitude of the playback signal is too low to permit detection.

Basically, errors are caused by nonuniformity in the coating which causes local variation in magnetic field strength and subsequent distortion of recorded transitions.

John C. Scott is director of technical development for Computest Corp. in Cherry Hill, N.J., specializing in computer test equipment.

Advice to Users Shopping Around: 'Don't Buy DP by Committee'

By Michael Weinstein
Of the CW Staff

BOSTON – "Make one person responsible and have him follow some basic steps" is Dave Tierney's advice on computer hardware selection.

Tierney, who advises State Street Bank of Boston on equipment, is against choosing equipment by committee.

"Unless one person is responsible, no one is responsible," he stated, "either for collecting the proper data or for committing to choices."

Once a person is designated as responsible, Tierney suggested some basic steps to follow – from defining the operational needs to recommending and accepting the chosen equipment.

"In defining the type of equipment needed, the primary source is the people who must use it. Ask what is the work objective that the equipment is to aid," he stated.

If users would determine their needs from internal objectives, they would avoid the major pitfall of equipment procurement: the salesman telling users what they need.

After deciding what the equipment must do, Tierney advised, "users should investigate vendors who have potentially suitable equipment."

From this investigation users should choose all vendors who possibly could fit their needs and submit a proposal to each.

Use a grid system to evaluate returning proposals, he suggested – across the top, list the characteristics the user needs for his working objective, down the side, list the names of the responding bidders.

In this matrix, users should evaluate how each piece of equipment appears to fill the original objective by giving it a value from one to five.

From the evaluation, Tierney recommended that users pick two – the primary choice and a backup.

Check the financial status of each of these and ask each for a current user list.

"Beware of vendors who will not give you this list," he cautioned, "as in almost all cases it means they have something to hide."

In calling the users of the prospective vendors' equipment ask for the date of delivery, whether there were any delays in installation; why the previous system was replaced; what is the new end result in throughput and cost; what are reliability and service like; and if they had to do it over, whether they would choose the same vendor.

Satisfied with the vendors' general equipment and service, users should have them perform benchmarks on the actual task they want the equipment to perform. For example, "if they say that their terminal is compatible with your configuration, ask them to plug it in and test your operations before you buy," he advised.

Finally, after users have determined their choices, they should document their steps in selection for presentation to management.

This final step is many times crucial since it stops vendors from going over the DP selector's head and trying to make a mangement sale, he advised.

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New OEM Products

Analyzer Allows 5-Second Testing

CONCORD, Calif. – Data Test Corp. has a new version of its Datatester 4000 semiautomatic digital circuit analyzer to test and troubleshoot digital logic boards.

The Datatester 4000A-60 digitally registers the number of logic transitions through a circuit under test at each output by introducing a series of nonsynchronous (Grey Code) square waves to all its inputs.

The maximum time required per test is five seconds, the firm said. No programming is needed to verify every combination of the I/O logic or truth tables for complex logic circuits.

Consisting of two modules, the unit costs $4,340 from 822 Challenge Drive, 94520.

System Can Test Semiconductor Memories

NEWPORT BEACH, Calif. – Western Digital Corp. is offering the Spartan 770 "Bit Rider" LSI Test System for testing semiconductor memories.

The "Bit Rider" includes 32 memory channels, 15 drivers and a high-speed, 10 μA resolution comparator. The unit offers 1 nsec timing resolution. A microprogrammable RAM memory allows for test-pattern storage and pattern generation at 5 MHz to test efficiently both recursive and random logic circuits, the firm noted. The built-in controller eliminates the necessity of a computer for basic testing although a PDP-11 option allows data logging; characterization and multiple programs to be run with the Spartalk software packages.

The price of the "Bit Rider" is $59,770. The firm is at 19242 Red Hill Ave., 92663.

Keyswitch Allows Manual Entry of Commands

HERKIMER, N.Y. – A "pancake" fast-make/fast-break keyswitch has been introduced by Mohawk Data Sciences Corp.

The Type S Signal Keyswitch, which provides manual entry of commands into systems using DTL, TTL or MOS circuit logic is available only as mounted arrays on a common printed-circuit board.

Typical per-key cost ranges from 21 cents to 29 cents mounted on the customer's board; push-pull alternate-action is an additional 10 cents to 12 cents/keystation. Delivery is 10 to 12 weeks.

Paper Tape Handler Used With Any Reader

HACKENSACK, N.J. – The Model 3300 paper tape handler from Data Peripheral Inc., operates bidirectionally at speeds up to 600 char./sec (60 in./sec) with any reader.

Photoelectric (LED) solid-state switches sense tape requirements and triac control spooling motors.

End of tape and broken tape will shut off the spooler. Two 7-1/2 in. diameter spools are supplied.

Unit price is $350. OEM sales in 100 quantity lots are $280 each from 14 Porter St., 07601.

9K Bit ROM Offers 120 Nsec Access Time

SUNNYVALE, Calif. – Monolithic Memories, Inc. has added the MM5260/6260 9,216 bit ROM to its line of read-only memories.

The device is organized as 1,024 by 9, offers 120-nsec access time and may be ordered as a 7 by 9 font character generator.

The 9K ROM is packaged in a 24-pin ceramic DIP and is priced at $65 in 100 lots from 1165 E. Arques Ave., 94086.

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digital

Atlanta Workshop

Bankers to Examine Trust Automation

ATLANTA – Trust department and data processing personnel will put their heads together here on the problems of trust automation at an American Bankers Association (ABA) Trust Operations and Automation workshop March 18-21.

The workshop is jointly sponsored by the Trust Division and the Operations and Automation Division of the ABA. Topics range from trust information systems and automated methods of tax accounting, to computer output microfilm systems.

Alternative Approaches

O.W. Chapman, vice-president of the American Security and Trust Co., Washington, D.C., will moderate a panel discussion covering alternative approaches to securities handling problems.

A panel on the last day of the meeting will deal with current legislation issues. Robert L. Bevan, assistant federal legislation counsel of the ABA, will moderate. Other panelists include members of the Securities and Exchange Commission, the Office of the Comptroller of Currency and the Senate Committee on Banking.

Societies/ User Groups

During the two-and-a-half day workshop registrants will have an opportunity to meet with suppliers of software packages and services relating to trust automation.

Fees for the workshop are $125 for banking personnel and $150 for nonbankers. More information is available from Fred Tippett, associate director, Operations and Automation, American Bankers Association, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

Calendar

March 12-14, Greenbelt, Md. – APL (A Programming Language) User's Conference. Contact: Cyrus J. Creveling, Code 560, Goddard Space Flight Center, Greenbelt, Md. 20771.

March 12-14, New York – 19th Annual Systems Management Conference. Contact: American Management Association, Inc., The American Management Association Building, 135 W. 50th St., New York, N.Y. 10020.

March 16, San Francisco – Association for Systems Management, San Francisco Chapter 22nd Annual Spring Conference. Contact: Jack France, The Bank of California, Systems and Procedures Department, P.O. Box 45000, San Francisco, Calif. 94145.

March 20-23, Monterey, Calif. – CPEUG (Computer Performance Evaluation Users Group) Meeting. Contact: John A. Blue, Chairman, CPEUG, Department of the Navy, Automatic Data Processing Equipment Selection Office, Washington, D.C. 20390.

Martin Interim SCDP President

HUDSON, Mass. – Jerry Martin has assumed the presidency of the Society of Certified Data Processors, upon Alan Taylor's resignation from that position. Martin will hold this office until elections for a new president are completed.

Taylor plans to continue work for the society on the Computer Foundation project and for other society research and development projects.

In the announcement, Taylor pointed out that he was elected for a one-year term last February, and received instructions to create a voice for the society last June.

"That mandate has been fulfilled," he said. "With the SCDP having now taken its place as a member of Codasyl, a member of the Computer Foundation Organizing Committee, and a member of the American National Standards Institute, our members certainly have a voice. In addition, our membership in Ansi Committee X3 is currently being processed."

The society has developed four draft standards which are currently being processed for adoption as Ansi standards, Taylor said.

Taylor attributed the success of the SCDP in achieving its goals to the active grass-roots membership. "We simply were not able to use all the help that was offered," he said.

Sigspac Needs Help

NEW YORK – ACM members of the Special Interest Group on Urban Data Systems, Planning, Architecture and Civil Engineering (Sigspac) interested in keeping their association alive must submit a petition to the SIG/SIC Board before April 30, 1973.

Unless a petition of 50 signatures is received by that date, the SIG/SIC Board will initiate dissolution proceedings.

Concerned Sigspac members should contact Gerald M. Sturman, chairman, Sigspac; Parsons, Brinckerhoff, Quade & Douglas, 111 John St., N.Y., 10038.

Mini Group Proposed

LODI, N.J. – An Association for Computing Machinery special interest committee on minicomputers – to facilitate sharing of user experiences with minis and provide a central information source – has been proposed here.

At least 50 signatures are needed from ACM members to form the committee.

The committee would serve as a central source where users and other interested parties could obtain information, and where manufacturers and other related companies could inform interested parties of new products and services, according to Jon R. David, who proposed the formation of the committee.

We, the undersigned members of ACM, wish to petition the ACM Council for formation of a Special Interest Committee on Minicomputers (Sicmini).

____
Member Name (Print)

ACM Member # ____________

____
Member Signature

Address ________________

____

Please mail to Jon R. David, 256 Garabaldi Ave., Lodi, N.J. 07644.

Flexibility Puts Key-Disk Ahead

WASHINGTON, D.C. – The major advantage of today's key-to-disk systems over keypunch equipment is the flexibility the user gains, Geoffrey Thomas of the Cost of Living Council believes.

For example, he noted, the Cost of Living Council has one form with 16 different formats on it. "Could you imagine the time it would take a keypunch operator to change the drum card to new formats every time just to punch one sheet?" he queried attendees at a Caravan/73 workshop.

With the Computer Machinery key-to-disk system used by the council each of the formats can be kept on disk and called up by the local operator as needed.

He noted, however, that the Council was not the typical user since production work took a low priority in its data entry shop and a user who could batch all his work, so an operator could only be punching one format all day, might not need as much flexibility.

"But if we had had to have each operator write each format, we would have been in real trouble," he said, "and might just as well have stayed with keypunch."

In choosing equipment, he said, a vendor with local training should get a real plus, since it is often not possible to wait for a vendor to schedule a class for operators and it is expensive to send operators out for training.

At the same time, he added, it was usually a slow learning process to get operators to work effectively on the new systems, since most operators viewed the key-to-disk system as a prestige assignment and wanted to learn how to use it.

One user in the audience, however, said his installation had had a hard time converting the operators over 50 years old to using the new systems. "But once we got them used to it," he added, "they were the best workers in the shop."

Maintenance of Mixed-Vendor Systems 'Overrated' Problem

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. – The maintenance problems that can arise from mixed-vendor systems may be vastly exaggerated in order to frighten computer users from going to independently made equipment, panelists at the recent Computer Caravan/73 here indicated.

"We generally don't have problems with different equipment suppliers," according to Dr. Pat Hagerty of the University of Maryland in a talk on the selection of terminals and modems for communications systems.

Scare Tactics

"The problem," he stated, "is definitely overrated by the suppliers who want to scare you out of going to an independent vendor for equipment to attach to the Bell network."

Generally, he said, the service people from Bell and the non-Bell suppliers "get along well and try to be helpful" in solving user problems, whether the problem is in their particular piece of equipment or in the equipment of another vendor.

At the same time, he noted, if there is any problem it is usually generated at the management level of the various firms.

But if the user is having a particular problem with a customer engineer from one company or another, Hagerty noted, the user could have him replaced if he screamed loud enough to the salesman on the account or to the management of that company.

Even though one audience member of the panel that delved into purchasing and use of independent peripherals said he had heard maintenance problems increased "as a square of the vendors involved in the shop," panelist Dave Whitestone of Potomac Electric Power Co. (Pepco) disagreed.

He said that so far – and Pepco has been using independent equipment since 1969 – "all vendors have been extremely cooperative," when it comes to maintenance problems.

If there were any problems, however, they would probably arise right at the start of the use of the new equipment, he said.

"It's going to take some time for you to get all of the vendor's service people to work together," he noted, "but once they get used to the mixed-vendor shop the problems are really minimal."

Users Differ on How To Pick, Train Staff

WASHINGTON, D.C. – Even though users spend the largest part of their budgets on personnel, there seem to be no clearcut guidelines on how to select and train them.

Most of the users at a Caravan/73 session here related different ways of dealing with the same problems, with little common threads in their management approaches to the subject, except for the desire to improve their personnel management techniques.

At the same time, few of the users indicated they currently had any formal in-house training programs for either new or old personnel – but once again they indicated a desire to improve this process.

In the selection and training areas, workshop leader G.D. Springer gave users a multipoint program to use for recruiting people and then training them after they were hired.

But, he warned, any guidelines for personnel handling have to be made to fit the particular installation's needs and the personnel involved and cannot be applied across the board to all installations or to all personnel within an installation.

The first priority when considering adding personnel or replacing people who have left is to discover whether there is a real need for the position, he noted.

Secondly, a firm should take a hard look at the job description and set the requirements in writing.

Next, the firm should establish the salary range for the position and set a maximum starting level. In too many cases, he said, a firm will go over what it really wanted to pay as a starting salary because it is desperate to get someone in the job, but, he said, this only causes problems later with present employees or with the new employee at review time.

A computer installation should also carefully develop its screening and interview techniques and should establish a method to test prospective employees at levels beyond the general aptitude tests.

After hiring a new employee, the manager should set an evaluation period or several evaluation periods to make sure he is performing the job expected.

La Caravane arrive

La Caravane Informatique

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LE FORUM

L'EXPOSITION

La Caravane Informatique

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, Zero-Un *Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over $27 million.

Independent Peripheral Equipment expenditures are expected to increase markedly in 1973, partially as a result of newly expanded marketing operations.

If you're marketing in Europe — or if you want to be — "La Caravane" is a sales tool you shouldn't pass up. If you'd like the details, just send in the coupon or call Neal Wilder at (617) 332-5606.

French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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☐ French Market Caravan (May 2-June 7).
☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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CI Notes

DP May Rank Number 2

STAMFORD, Conn. – New sectors of the telecommunications industry may be on their way toward displacing the computer industry from its role as the "most dynamic, influential industry of the decade," according to a report by the Business Communications Co.

While still much smaller than the $2 billion/year voice service business, known as Plain Old Telephone Service, the combined new sectors are growing four to five times as fast as the older one, and sales should reach $5.6 billion/year by 1977, the report stated.

The fastest growing sector is new services, including new common carriers, domestic satellites and CATV, at a 39% annual rate, while digital equipment is second, with a 28% rate. The report projects in 1977 installed equipment for this field will be valued at $6.1 billion. The other categories include voice-independent "interconnection," and other equipment, such as facsimile units. BCC is at 471 Glenbrook Road, 06906.

Siemens to Buy Computest

CHERRY HILL, N.J. – Siemens Corp. has agreed in principle to acquire Computest Corp. for cash. Computest management and operation will remain unchanged.

This marks the second DP-oriented acquisition by a German firm since November, when Nixdorf announced plans to acquire Victor Comptometer Corp.

Supershorts

An agreement between Decision Data Corp. and International Engineering Ltd. (IEL) is designed to provide Decision with European manufacturing capabilities this year. Decision has agreed to invest $600,000 in IEL, a Northern Ireland firm, and has an option to acquire up to a 50% interest.

— — —

The first Army installation in the World Wide Military Command and Control System (Wimmix) has accepted a dual Honeywell 6050 system. Fourteen systems were delivered in 1972.

— — —

Delta Data Systems has been added to the General Services Administration's approved list of company products for purchase by government agencies.

— — —

Univac has selected Intel Corp. to supply its 1103 semiconductor memory systems. The initial contract is valued at over $1 million, and contains options for the purchase of additional memory systems.

— — —

Computer Automation, Inc. has appointed Geveke Elektronika en Automatic N.V. as its distributor in the Benelux nations.

— — —

Time/Data Corp. has appointed Tokyo Electron Laboratories Inc. as its representative in Japan.

— — —

Microdata Corp. has assigned Teijin Advanced Products Corp. Japanese marketing rights for the Microdata 1600 and 400 product lines.

— — —

High Performance Technology, Inc. of Midland, Mich., has reopened its single crystal production facility. The company has undergone a complete reorganization of its management and capital structure since it was closed in October.

— — —

The Sperry Remington Division of Sperry Rand intends to take a license from Redactron Corp. to manufacture editing typewriters.

IBM-Telex Documents

CIA Would Make Suit Papers Public

By E. Drake Lundell Jr.

Of the CW Staff

TULSA, Okla. – The Computer Industry Association (CIA) has charged that IBM is attempting to keep documents secret that should be in the public record in IBM's current antitrust suit with Telex, which is slated to go to trial here April 16.

A week ago the association asked to see 25 documents that were filed as part of the case and which the association said concerned internal IBM projections of the effect of certain marketing moves on the competition and on IBM's future business.

Telex indicated it had no objection to the documents being released to the association, the press and the public. However, IBM objected to their release and said it would like to have time to inspect the papers before they were released.

After inspecting the documents over a weekend, IBM contended that all of them except three contained trade secret information and asked Judge Sherman A. Christensen that the documents not be released.

However, the Computer Industry Association last week filed a response to the IBM request, in which it asked Christensen to make the contested documents public immediately and to prevent further "subterfuge" in handling of documents in the antitrust case against IBM.

Competitive Dealings

The IBM request to Christensen cited the fact that the documents were submitted under protective rulings by two other judges, an IBM spokesman said. The documents "sought by the CIA contain confidential information concerning IBM's products and business that should not be made available to competitors, such as members of the CIA," he said.

"It's apparent that the primary purpose of the CIA is to generate prejudicial publicity concerning the antitrust cases pending IBM, and in light of the closeness of the Telex trial and the potential problem posed by such prejudicial publicity, IBM submits that it is not useful or desirable to facilitate the publicity seeking efforts of the CIA," the spokesman said.

The CIA has charged that the contested documents do not contain trade secret information but rather contain only information on IBM marketing projections and forecasts of the effect of certain moves upon the competition.

The moves considered in the documents are said to include the changes in memory and CPU prices outlined in an IBM memo attributed to T. Vincent Learson and the proposed effect of the longer-term lease plans that IBM was considering at the time.

"We want to make sure that these documents are not destroyed like the data base was in the Control Data-IBM case," according to CIA President Dan McGurk, "and that is why we have asked for them to be released publicly.

"Making them public is the only way to make sure they will not be lost to the industry and the public at large," he indicated.

In addition, McGurk said that from the titles of the documents it was impossible to see how they contained any trade secret information, and he indicated it was likely that IBM was only using the trade secret argument as an excuse to keep embarrassing information from public release.

How Secret?

The most important argument in the CIA request, sources said, is the charge of secrecy of documents in the case. The IBM move to keep documents secret – so closely on the heels of the criticized data base destruction in the Control Data-IBM settlement – seems to suggest, they said, that there is a great deal of information in the documents attached to the case that could be harmful to IBM's case or at least to its image.

Opposition Is Certain to Bell Plans To Restructure Private Line Rates

By Ronald A. Frank

Of the CW Staff

WASHINGTON, D.C. – AT&T's plans to restructure its private line tariffs (Story on Page 1) will surely be contested by the specialized common carriers and the Federal Communications Commission.

To change its rates AT&T will have to justify that the proposed charges cover its costs or are "fully compensatory," as Bell claims.

In its request to file the proposed changes, AT&T has told the FCC that the total revenue it gets from private lines will be redistributed to more accurately reflect its costs. But there will undoubtedly be questions for Bell to answer.

For years Bell has provided private lines at $3/mile and now it says it can provide those same facilities in highly populated (high-density) areas for only 85 cent/mile. It will be important for AT&T to document how these changes are justified from an accounting standpoint.

Analysis

It is no coincidence that the lower rates duplicate the routes where MCI and the other specialized carriers plan to operate. An MCI spokesman said the FCC will have to be sure that AT&T is proposing to compete fairly.

Under its now-famous 18920 ruling in 1971, the FCC said existing carriers will be allowed to compete with the specialized carriers so long as they do so "equally and fairly."

If Bell's proposed changes are not allowed to take effect, long-distance telephone users will have to pay $100 million more annually by 1976 because of the private line revenue that will be lost, according to Richard R. Hough, president of AT&T's Long Lines Department.

Under the existing private line rates Hough estimated AT&T will lose $200 million to specialized common carrier competition by 1976.

AT&T figures for 1971 show private line revenues of $185 million. So Hough's estimates indicate Bell would lose more than the value of its current revenues if the present rates were to remain.

When asked why it would take only $100 million in added revenue to make up an estimated loss of twice that amount, Hough said the difference of $100 million was the value of AT&T's facilities allocated to private line services.

Based on these estimates, it appears that AT&T is dedicating $100 million in network resources to generate $185 million in revenues. It would then follow that the bulk of AT&T's subscribers is doing without $100 million of network facilities so that 19,400 private line users can enjoy lower rates than dial-up customers.

AT&T has told the FCC the proposed rates "more closely reflect the cost of providing the [private line] service." Before any FCC approval is given to restructure the interstate voice-grade private line rates, the costs of that service will come under very close scrutiny.

Caravan/73: a Sales 'Happening'

By a CW Staff Writer

WASHINGTON, D.C. – Now that the Computer Caravan/73 has visited two cities on its 10-city tour, exhibitors are ready to talk about the results of the show so far.

"We've seen one and a half to two times the number of people we saw in each city last year," according to Paul Lobel, marketing manager for Penril Data Communications.

"And," he added, "the quality has been twice as good as last year. In fact in Boston we sold enough equipment right off the floor to pay for the expense of being in that city – something we never did last year."

Small World

Lobel said two of the Boston sales came from people whom Penril had not been courting before the show.

"We didn't know they existed, but they came to the show and signed orders that were worth $10,000," he said.

The first sale of the show was made by Iomec representative Bob Martel, who just 45 minutes after the show opened in Boston closed an order he had been pursuing.

"We were working on this order," he said, "but the show atmosphere really helped to put it over the top. The customer could come in here and see the equipment working along with the rest of our line. He was impressed, and the show atmosphere helped impress him."

In addition, Martel said contacts gained at the Boston show "will have me tied up solidly for the next two weeks – and these aren't guys just shopping around, they want to talk turkey and are ready to sign contracts."

But direct sales aren't the only reason given by some exhibitors for being in the Caravan.

Increase Presence

"This show is helping us increase our presence in the various cities and regions around the country," according to Dallas Talley, marketing vice-president at General Computer Systems, a key-to-disk maker.

"Some users," he admitted, "have not really heard of us before. But if the results of Boston hold up – and I think they will – a lot more of them will be aware we are around when they look for data entry equipment."

In fact, Talley indicated his firm had talked to several users who were presently using or planning to get someone else's equipment. "We may have changed a few minds," he noted.

It is difficult, if not impossible, to put a dollar figure on the sales made so far this year as a direct result of the Caravan, but all exhibitors interviewed said they were seeing more good contacts this year than last – most indicating the number had doubled so far.

And last year, several firms sold over $1 million as a result of the Caravan, with one reporting sales of $2.5 million. This year might see those figures broken, exhibitors agreed.

Computer Users' Forum Registration

Name________________________________

Title________________________________

Company________________________________

Address________________________________

City________________________________

State________________Zip________________

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other ________________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec
08 Librarian/Educator
09 Other:________________

2. Please check the appropriate city:

____ Washington, D.C.	Feb 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form – or write for extra copies.

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Look over the topics below and choose the Forums that suit your needs. Then fill out the application above and reserve your place when The Computer Caravan/73 comes to a city near you.

FORUM TOPICS

Day 1 – Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited

In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

Changing User Needs Expected to Govern Future of Data Entry System Business

By E. Drake Lundell Jr.
Of the CW Staff

SANTA MONICA, Calif. – User needs and not technology should govern the future of the data entry business, according to Peter Zinsli, vice-president of Computer Machinery Corp. here.

Because of this, he said, the present "mixed-media" data entry systems do not have a lot of validity since they don't meet the present user's needs efficiently.

At the same time, he indicated there will be a market for such systems in the future since user needs will be changing over the next few years – but "it's not the time now."

OCR will have to be used more in the future, because the amount of data to be entered in computer systems will grow by four times by 1980 and not all of this growth can be met by key entry systems such as the ones produced at CMC, he said.

"When the user meets these problems of increased input requirements, then he will need the new systems." CMC will probably offer some type of "mixed-media" system in the future, he said, when users reach a point where they need such devices.

Users will move to such devices or to OCR not as a group, he said, but rather by industry or application area as they are forced to by their growing workloads for data entry.

About the Market

Zinsli does not expect the market for key entry equipment to level out in 1974 or 1975, as some industry researchers have predicted.

"There is a big unknown in their equations," he said, "and that is on what IBM plans to do. But I don't see much reason for the growth to level out."

By the end of 1971, he indicated, the key-to-disk makers had only penetrated 1.7% of the potential market and IBM was still shipping 5,000 129 keypunches monthly. Even with half of these being netted out – replacing existing installations – that still meant 2,500 new keypunch installations each month by IBM alone, he noted, which in turn indicates a growing market for the key-to-disk makers, not a stationery or shrinking one.

He also reported that CMC had gained the lead in the key-to-disk marketplace both in terms of the value of equipment installed and the number of units in the field over its closest competitor, Inforex.

At the end of 1972, CMC had 13,000 keystations installed, he said, compared to 12,000 for Inforex; 2,500 for Honeywell and 3,500 for the rest of the industry.

On an if-sold basis, the CMC equipment installed was valued at around $92 million, he said, compared with Inforex with $50 million to $60 million in installed equipment.

Presently CMC is producing 600 keystations monthly, he said, and the average size of a system being installed is around 10 keystations.

CMC 5 systems average 10 keystations, CMC 9s average 15 keystations and the first deliveries of the CMC 18 are averaging 22 to 24 keystations, which will raise the average system size when volume deliveries begin, Zinsli added.

The CMC business is divided about equally between its U.S. business and foreign operations.

The European market is highly fragmented by country, he indicated, with some of the nations tending to have highly centralized data entry operations and others having decentralized operations.

For example, Zinsli stated that in France only 20% of the shops operate with one to eight keystations, while in Germany, which is highly decentralized, 40% of the shops have between one to eight keystations. In the U.S., by contrast, 30% of the installations have one to eight keystations, and in the UK the number is 38%.

Surprisingly, even though key-to-disk systems are primarily sold on the idea tht they can reduce people costs in the U.S., the systems are also becoming popular in Japan with its lower labor rates, Zinsli related.

He also noted that the Japanese bought larger configurations for more centralized operations with 32 more keystation systems being sold overseas than here.

The Japanese are interested in productivity," he said, "so they buy this type of system for the increased productivity, even if it might not save them a great deal over their keypunching costs."

Itel Unit to Lease 370s

SAN FRANCISCO – Itel Corp. has set up a subsidiary, Itel Investment Management Corp., for purchasing for lease about $40 million of IBM 370 central processors and peripheral equipment manufactured by Itel and others.

The subsidiary has filed with the Securities and Exchange Commission to offer Limited Partnership Units, $10 million of which will be offered to the public. The remaining funds have been tentatively arranged with commercial banks.

360 Add-Ons 'Strong,' But 370s Cast Long Shadow

By Molly Upton
Of the CW Staff

BOSTON – The 360 add-on memory market, although admittedly "strong," according to a recent survey of manufacturers, is being overshadowed by the glamor of the 370 market.

Some makers are finding their production facilities hardpressed to keep up with the 370 demand, and marketing forces may be overlooking some areas in the 360 market in efforts to place well in the 370 race.

The 360 market, described as "getting more competitive every day," by Chris Gordon, New England district manager of Computer Investors Group, is "stronger than our optimistic forecasts had predicted," according to Bob Hengen, marketing vice-president of Cambridge Memories.

Refusing Orders

The 360 demand is so great that Gordon said CIG has had to turn down some orders, as Data Recall, the manufacturer, is concentrating exclusively on making 370 boxes now. Gordon explained that in short-term rentals it is difficult to recover costs, and the firm prefers to handle depreciated boxes coming off-rent.

Current inventory is sufficient to handle demand, he added.

Ampex, Electronic Memories and Magnetics and Cambridge Memories are all making new boxes for the 360 series.

CW Photos by M. Upton
Gordon

CW Inquiring Photographer

Although there was some difference of opinion as to which 360 models are more susceptible to inroads from the 370s, there was general agreement that "we'll pick up the customer when he gets to the 370."

To Larry Bellman of Ampex, the 360 add-on market looks concrete, although he feels the Model 30 user is likely to go to the 370/125, with the majority of the volume existing in the 40, 50 and 65 range.

John Reardon of EM&M noted the demand for 40 add-ons had slowed down some, which he attributed to upgrading to the 370/145.

Bellman

'Spooky' Business

The 360 business is "spooky," according to Hengen, as it runs serially by model rather than in a parallel fashion. "We get runs of orders by models that defy reasoning. For instance, demand can be great for 65s and 22s, and then alternate to 40s or big 30s," Hengen said.

Cambridge is receiving orders for larger amounts of memory, but the volume is roughly the same as it has been, he said.

Possibly this is because Cambridge isn't touching as many bases as it might in the 360 market due to booming 370 business, Hengen admitted.

The market for the Model 30 "looks very good," noted Hengen, who called the 30 "still the best doggone machine put together."

The argument over whether IBM would maintain CPUs with extended memory did cause some cancelled and delayed orders, the men conceded, but they said the volume returned as soon as the issue was settled.

Reardon

CIG offers 2M bytes for the 155 and will have 4M bytes for it, according to Gordon. This, with a DAT box, he suggested, could give the user the equivalent of a 370/158.

EM&M is beginning initial deliveries of up to 3M bytes for the 155 and 165, Reardon said.

The 370 market is taking "every bit we can produce," observed Hengen of Cambridge, who noted his firm is shipping units for the 155 and 165, and expects to begin shipping units for the 145 in June.

Some Disagreement

The effect of the recent IBM announcement on the expansion of the 145 memory was also interpreted differently [CW, Feb. 7].

Reardon said EM&M is "not concentrating" on the 145 market, as IBM just "bundled" up to 1M byte of core in the unit, which previously was available with 512K.

But Hengen said he thought this move by IBM probably broadened the market, although it left the add-on memory makers in a "less unique position." "We don't have to engineer the extension," he added.

IBM also stabilized the market, in Hengen's view, since he felt the users had not "bought the idea that 'the real 370' had stood up."

Hengen expects an accelerated move to the 370 now.

Although more companies are entering the memory arena, Hengen sees the market "holding up very nicely," with room for four or five good size memory companies. Probably the secret to success is to become more in tune with the systems companies and operate their businesses less like a semiconductor outfit and more like a computer company, he concluded.

Japan Business Leaders Unite to Seek Liberalization of Computer Imports

Special to Computerworld
From *Shukan Computer*

TOKYO – Japanese business and industrial leaders have called upon the government to take drastic measures – including liberalizing computer and integrated circuit imports – "in several months in order to reduce the nation's huge trade surplus."

The decision was made at an emergency meeting of leaders of the Federation of Economic Organizations (Keidanren).

This is the first time that Keidanren, the nation's most influential economic organization, has formally called for the liberalization of such items as computers and some farm products.

Japanese computer makers were shocked at the Keidanren leaders' decision.

According to industry sources, the makers had just decided earlier last week there was no reason for decontrol of imports of computers at present because foreign-made machines already hold a 50% share in the nation's market.

Further, they asked the Japanese Government last week not to liberalize computer imports until their five-year plan to develop new machines ends in 1976, the sources said.

The main points of the Keidanren plan are:

- The government should keep the yen floating so it may find an appropriate margin for revaluation through interactions of actual market forces.
- The government should liberalize imports of such "items of international interest" as computers and farm products, by taking measures to mitigate imports upon domestic industries. Imports of goods which are still placed under restraints should also be expanded.
- Tariffs on industrial products should be largely reduced even before new international negotiations on across-the-board tariff cuts is launched.
- Japan should strive for complete liberalization of international capital transactions. Concerning domestic industries which cannot yet afford to meet complete liberalization, the government should set a specific date for the 100% liberalization of foreign investment.
- A new law should be enacted to enable the government to respond to rapid changes in economic situations.

Microprogramming Coming Into Vogue, Costs Seen Dropping

SAN FRANCISCO – Microprogramming has become a highly practical reality through the use of advanced semiconductor technology in control memory design, Microdata President Donald W. Fuller told a group of security analysts recently.

But the full force of the technique, recognized as a theory with great potential 20 years ago, is only beginning to be felt.

On the Bandwagon

Almost every computer maker has incorporated microprogrammable computers in the product line, he noted.

"No wonder, when you realize what microprogramming can do for the user as well as the manufacturer. The cost of developing new computer architectures is the lowest ever," he said.

The manufacturing cost for a family of related models has dropped dramatically as have costs for training and servicing. And with microprogramming, software can be fully protected from theft by the competition," Fuller said.

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Nickels & Dimes

Good Riddance Department: RCA expects to report record sales and earnings of over $2 a share in its first full year since disposing of its computer entity. "The results validated the correctness of that decision," Chairman Robert W. Sarnoff said. "Our managerial and technological resources, freed of the computer drain, were mustered in support of our continuing operations, with priorities going to the most vigorous growth segments . . ."

$$$

United Telecommunications will pay its first dividend of 25 cents per common share on March 28 to stockholders of record Feb. 28.

$$$

The sale of forms continues to increase in importance for **Data Documents**, which indicated in the first quarter standard cards represent less than 60% of sales while forms now account for about 25%.

$$$

Sales of **Applications Software's** ASI-ST data management system exceeded $2 million earlier than had been anticipated, because of sharp acceleration in recent months.

$$$

Wiltek, communications equipment maker, has completed a private placement of convertible subordinated notes in the amount of $2 million with three institutional investors.

$$$

Computer Consoles has signed a one-year loan agreement with Marine Midland Bank-Rochester for up to $2 million to finance construction and leasing of its Data Management Systems.

$70 Million Write-Off

NCR Reveals $59.6 Million Loss for '72

DAYTON, Ohio – A $70.1 million write-off, added to the poor first quarter resulting from a strike the previous year, has caused National Cash Register Co. to record a loss of $59.6 million for the year.

Earnings for 1971 totaled $2.1 million or 8 cents a share. Revenue in 1972 rose to $1.56 billion, up 6% from $1.47 billion in 1971.

Operating earnings prior to the charge were improved, totaling $10.5 million, and revenue from computer rental and sales rose 17% to $250.8 million. Computer shipments were up 17% from 1971, the firm said.

Transition

The company has changed its method of depreciating plant, manufacturing and rental equipment to the straight-line method for additions beginning in 1972.

It is also cutting the estimated useful life of rental equipment to five years from six. NCR has changed to the "first in, first out" method of inventory evaluation.

NCR expects a profitable year in 1973, with improved results from the computer business due to a growing customer base.

The charge reflects a write-off of previously deferred marketing costs, a restatement of parts inventories, costs of realigning and equipping manufacturing facilities in connection with a transition from mechanical cash registers to new electronic products, according to NCR.

The fourth quarter contributed $10.1 million of the operating profit, in contrast with a $15.7 million loss in 1971.

Suit Questions REI Earnings Reports

DALLAS – A suit has been filed in the U.S. District Court for the Southern District of New York charging Recognition Equipment Inc. with overstating its sales, profits and net assets in financial statements and other reports issued between October 31, 1969, and July 1, 1971.

Plaintiff Michael Rifkin, allegedly a purchaser of REI stock, charged the firm with violations of Section 10(b) of the Securities Exchange Act of 1934.

REI said the reports in question "reflected accepted accounting practices and made full and proper disclosure," and that the claims will be "vigorously resisted."

Interdata Earnings Jump in Year As Revenues Show Rise of 46%

OCEANPORT, N.J. – Quantity sales of Interdata Corp.'s New Series minicomputers were credited with the substantial rise in earnings and revenues for the year ended Dec. 31.

Earnings, including a $349,700 special credit, rose to $894,900 or 45 cents a share compared with $45,200 or 3 cents a share last year. Revenues reached $12.8 million, a 46% jump from $8.8 million in 1971.

"Of major significance was the move by major corporations to begin purchasing our products in large quantities, thus permitting us to realize increased production efficiencies," President Daniel Sinnott said.

Backlog reached $4.7 million in the fourth quarter compared with $3.2 million at the end of 1971.

Sinnott noted that the earnings growth occurred despite an $85,000 charge as a result of reducing previously capitalized research and development.

"Furthermore, we are targeting a substantial improvement in 1973 net income despite the fact that the company will charge the remaining $460,000 of previously capitalized R&D to operations during the year. The company does not plan to capitalize any 1973 R&D expenditures," he said.

In the fourth quarter, earnings totaled $200,200 or 9 cents a share compared with $158,100 or 9 cents a share in the comparable year ago period.

Revenues rose to $3.5 million from $2.5 million.

Ampex Posts Profitable 3d Quarter

REDWOOD CITY, Calif. – Ampex has completed its second consecutive profitable quarter and cut its long-term debt by $71 million in the 15 months since a management change.

In the third quarter ended Jan. 27, operating earnings totaled $1 million or 10 cents a share before a special gain of $2.8 million, for a total of $3.8 million or 35 cents a share. Revenues totaled $74.4 million.

The special gain was derived from the sale of a subsidiary, Mandrel Industries Inc.

Comparable year-earlier results are unavailable, since auditors said the 1972 results couldn't be delineated from 1971 results. Ampex had a total loss of $101.7 million in the two years.

Ampex showed a $1.8 million deficit for the nine months, before the special credit produced earnings of $904,000 or 8 cents a share. Revenues for the period totaled $221.2 million.

Acquisitions

United Data Centers, Inc. has acquired Centralized Accounting, Inc., a Madison, Wis., based data center, for 50,000 shares of

Valley Computer has agreed in principle to merge into a wholly owned subsidiary of Tymshare, Inc. Tymshare will issue up to 50,000 shares of its common stock.

United Data Centers stock, plus an additional number of shares to be determined in the future.

Halliburton Co. has acquired Ebasco Services Inc. and Vernon Graphics, Inc. from Boise Cascade Corp. for $65 million cash.

Vermont Research Corp. has acquired OMI Memories, Inc. of Los Angeles, which has been merged into VRC California, a wholly owned subsidiary of Vermont. Vermont issued 61,621 shares of its common stock in return for all of the stock of OMI.

U.S. National Bank (San Diego) has acquired about 80% of the equity securities of Data Automation Co., Inc. of Dallas, after the firm's plan for reorganization under Chapter 11 was approved.

TRADE*QUOTES

Computerworld Stock Trading Summary

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CLOSING PRICES THURSDAY, MARCH 1, 1973

SOFTWARE & EDP SERVICES

EXCH		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 3	1 1/2	- 1/8	-7.6
A	APPLIED DATA RES.	3- 7	3 1/8	- 1/2	-13.7
O	APPLIED LOGIC	1- 4	2 5/8	- 1/8	-4.5
N	AUTOMATIC DATA PROC	70- 99	73 5/6	-2 7/8	-3.7
O	BRANDON APPLIED SYST	1- 2	3/4	+ 1/8	+20.0
O	COMPUTER DIMENSIONS	3- 14	3 3/8	- 1/8	-3.5
O	COMPUTER DYNAMICS	1- 4	1	+ 1/8	+14.2
O	COMPUTER NETWORK	2- 7	2 1/4	0	0.0
N	COMPUTER SCIENCES	4- 10	4 1/8	- 1/8	-2.9
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/4	+ 3/8	+15.7
O	COMPUTER USAGE	6- 14	6 1/4	-1	-13.7
N	COMPUTING & SOFTWARE	10- 28	9 7/8	- 5/8	-5.9
O	COMRESS	1- 3	3/4	- 1/8	-14.2
O	COMSHARE	5- 10	7 1/6	- 3/8	-5.0
O	DATATAB	4- 9	3 1/2	0	0.0
O	EDP RESOURCES	1- 8	1 1/2	0	0.0
A	ELECT COMP PROG	1- 5	1 1/2	+ 1/8	+9.0
N	ELECTRONIC DATA SYS.	43- 65	48 5/8	-1 1/4	-2.5
O	INFORMATICS	3- 11	3 3/4	+ 1/8	+3.4
O	I.D.A. DATA CORP	1- 3	5/8	- 1/8	-16.6
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	8 1/2	-1	-10.5
O	LOGICON	4- 9	5 1/8	-1 1/8	-18.0
A	MANAGEMENT DATA	3- 10	3 1/4	0	0.0
O	NATIONAL CSS INC	0- 37	32 7/8	-2 3/4	-7.7
O	NATIONAL INFO SRVCS	1- 5	1 7/8	+ 1/8	+7.1
P	ON LINE SYSTEMS INC	8- 28	21	-1 3/4	-7.6
N	PLANNING RESEARCH	4- 17	4 1/8	- 1/8	-2.9
O	PROGRAMMING METHODS	20- 25	22 1/4	- 1/4	-1.1
O	PROGRAMMING & SYS	1- 2	3/4	- 1/8	-14.2
O	RAPIDATA INC	5- 27	21 1/4	0	0.0
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	- 1/8	-9.0
O	SIMPLICITY COMPUTER	1- 5	2 7/8	- 1/8	-4.1
O	TBS COMPUTER CENTERS	3- 6	3 1/4	0	0.0
O	TCC INC	1- 3	3/8	- 1/8	-25.0
O	TYMSHARE INC	7- 12	7 5/8	- 1/4	-3.1
O	UNITED DATA CENTER	5- 8	5 1/4	- 1/4	-4.5
N	UNIVERSITY COMPUTING	7- 26	9 1/8	-2 1/4	-19.7
A	URS SYSTEMS	6- 10	5 5/8	- 1/4	-4.2

PERIPHERALS & SUBSYSTEMS

EXCH		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	23- 49	22 3/4	+ 1/8	+0.5
O	ADVANCED MEMORY SYS	12- 23	16 5/8	-1 3/4	-9.5
N	AMPEX CORP	5- 15	6 1/4	- 1/4	-3.8
O	ANDERSON JACOBSON	4- 8	5 3/4	- 1/8	-2.1
O	BEEHIVE MEDICAL ELEC	1- 8	6 3/4	+ 5/8	+10.2
A	BOLT,BERANEK & NEW	5- 21	8 3/4	- 1/4	-2.7
N	BUNKER-RAMO	7- 14	7 1/2	- 1/4	-3.2
A	CALCOMP	9- 25	11 1/2	- 1/2	-4.1
O	CAMBRIDGE MEMORIES	9- 15	10 5/8	+ 1/8	+1.1
O	CENTRONICS DATA COMP	6- 28	21 1/2	+2 1/4	+11.6
O	CODEX CORP	6- 25	13	-1 1/4	-8.7
O	COGNITRONICS	2- 5	1 1/2	- 1/8	-7.6
O	COMPUTER COMMUN.	1- 7	2 1/2	- 1/4	-9.0
A	COMPUTER EQUIPMENT	2- 4	2	- 1/4	-11.1
O	COMPUTER MACHINERY	7- 13	10 1/8	- 7/8	-7.9
O	COMPUTER TRANSCEIVER	2- 9	2 3/4	- 3/4	-21.4
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	23 1/2	- 1/4	-1.0
A	DATA PRODUCTS CORP	3- 7	3 3/8	- 3/6	-10.0
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 7/8	0	0.0
O	DI/AN CONTROLS	3- 8	3 3/8	- 3/6	-10.0
N	ELECTRONIC M & M	3- 8	4 1/8	0	0.0
O	FABRI-TEK	2- 5	3 1/2	- 3/8	-9.6
O	GENERAL COMPUTER SYS	6- 16	8 1/4	- 1/4	-2.9
N	GENERAL ELECTRIC	59- 74	66 1/4	-1 5/8	-2.3
N	HAZELTINE CORP	7- 13	6 1/2	- 3/4	-10.3
O	INFOREX INC	14- 36	13 5/8	- 1/2	-3.5
O	INFORMATION DISPLAYS	1- 5	5/8	- 1/8	-16.6
O	INFORMATION INTL INC	8- 25	11 1/2	- 3/4	-6.1
A	LUNDY ELECTRONICS	4- 14	6 7/8	+ 1/4	+3.7
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20 1/4	-2	-8.9
N	MOHAWK DATA SCI	8- 27	7 5/8	-1	-11.5
O	ODEC COMPUTER SYST.	3- 12	3	- 1/4	-7.6
U	OPTICAL SCANNING	2- 16	3 1/4	0	0.0
O	PERTEC CORP	5- 17	5 1/4	-1 5/8	-23.6
O	PHOTON	3- 15	4	- 3/4	-15.7
A	POTTER INSTRUMENT	6- 21	6 1/4	- 3/4	-10.7
O	PRECISION INST.	2- 13	4 1/4	-1	-19.0
O	RECOGNITION EQUIP	5- 15	5 1/2	- 3/4	-12.0
N	SANDERS ASSOCIATES	11- 21	11 3/8	+ 1/8	+1.1
O	SCAN DATA	3- 13	2 7/8	- 3/8	-11.5
O	STORAGE TECHNOLOGY	17- 39	20	- 7/8	-4.1
O	SYCOR INC	7- 11	6 1/2	-1	-10.5
O	TALLY CORP.	8- 15	10	-2 1/8	-17.5
N	TEKTRONIX INC	34- 64	40 7/6	+ 7/8	+2.1
N	TELEX	4- 15	4	- 1/8	-3.0
O	WILTEK INC	19- 26	15 1/4	- 1/2	-3.1

SUPPLIES & ACCESSORIES

EXCH		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6 3/4	0	0.0
A	BARRY WRIGHT	9- 14	8 5/6	- 5/8	-6.7
A	DATA DOCUMENTS	17- 26	16 3/4	-1 1/8	-5.6
O	DUPLEX PRODUCTS INC	8- 16	8 3/4	- 1/4	-2.7
N	ENNIS BUS. FORMS	6- 10	6 3/8	- 1/6	-1.9
O	GRAHAM MAGNETICS	15- 27	16 1/2	- 1/4	-1.4
O	GRAPHIC CONTROLS	11- 15	11 3/8	- 7/8	-7.1
N	3M COMPANY	76- 66	79 3/4	-2 3/4	-3.3
O	MOORE CORP LTD	42- 57	55	- 1/8	-0.2
N	NASHUA CORP	48- 62	52 3/4	-1 3/8	-2.5
O	REYNOLDS & REYNOLD	37- 77	47 5/6	+ 1/2	+1.0
O	STANDARD REGISTER	14- 20	17 3/4	-2	-10.1
O	TAB PRODUCTS CO	14- 23	18 1/2	-1	-5.1
N	VARCO	20- 26	20 1/4	-1	-4.7
A	WABASH MAGNETICS	6- 11	6 1/6	+ 1/8	+2.0
N	WALLACE BUS FORMS	21- 26	23 3/8	-1 1/8	-4.5

COMPUTER SYSTEMS

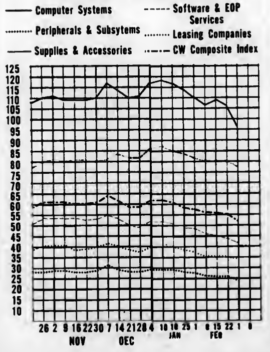
EXCH		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	147-240	226 1/2	-3 1/4	-1.4
N	COLLINS RADIO	14- 27	22 3/8	+ 1/2	+2.2
N	CONTROL DATA CORP	43- 78	46 1/2	-2 1/2	-5.1
U	DATA GENERAL CORP	39-131	39 1/2	-84	-68.0
O	DIGITAL COMP CONTROL	3- 25	3 1/4	- 1/4	-7.1
N	DIGITAL EQUIPMENT	72-105	89 3/4	-7 7/8	-6.0
N	ELECTRONIC ASSOC.	6- 13	6 5/8	- 1/2	-7.0
A	ELECTRONIC ENGINEER.	6- 14	6 1/4	-1 1/2	-15.3
N	FOXBORO	23- 41	27	-1 1/2	-5.2
O	GENERAL AUTOMATION	13- 55	41	-8 1/4	-16.7
O	GRI COMPUTER CORP	2- 5	2	- 1/8	-5.8
N	HEWLETT-PACKARD CO	46- 94	86 7/8	- 5/8	-0.7
N	HONEYWELL INC	104-170	107 3/4	+ 1/2	+0.4
N	IBM	333-451	427	-17	-3.8
O	INTERDATA INC	8- 16	9 3/8	- 1/2	-5.0
N	MEMOREX	10- 38	10 1/8	-2 1/2	-19.8
O	MICRODATA CORP	5- 10	6 1/4	- 5/8	-7.0
N	NCR	27- 38	26 3/4	-1 5/8	-5.7
N	RAYTHEON CO	27- 47	29	-1 1/4	-4.1
N	SPERRY RAND	30- 50	42 5/8	-2 3/6	-5.2
A	SYSTEMS ENG. LABS	5- 16	4 1/2	-1	-18.1
N	VARIAN ASSOCIATES	14- 22	14	-1	-6.6
N	WANG LABS.	22- 61	23	-1 1/4	-5.1
N	XEROX CORP	121-172	157 1/6	-7 7/8	-4.7

LEASING COMPANIES

EXCH		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	3- 18	3 5/8	+ 1/8	+3.5
O	BRESNAHAN COMP.	1- 3	1 1/4	- 1/8	-9.0
O	COMDISCO INC	3- 18	11 3/4	-1 7/8	-13.7
O	COMMERCE GROUP CORP	5- 11	4 3/4	+ 1/6	+2.7
O	COMPUTER EXCHANGE	1- 3	5/8	- 1/6	-16.6
A	COMPUTER INVSTRS GRP	4- 14	4 1/4	- 1/8	-2.8
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	8	+ 1/8	+1.5
M	DATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	DCL INC	2- 10	2 1/4	0	0.0
A	DEARBORN-STORM	16- 26	19 3/4	- 1/2	-2.4
A	DPA, INC.	5- 8	6 3/4	+ 1/4	+3.8
A	GRANITE MGT	5- 11	5	0	0.0
A	GREYHOUND COMPUTER	5- 11	4 3/4	- 1/4	-5.0
A	ITEL	7- 12	8 1/2	- 1/4	-2.8
N	LEASCO CORP	12- 24	13 1/6	- 3/8	-2.7
O	LEASPAC CORP	6- 15	6	0	0.0
O	LECTRO MGT INC	1- 4	1 3/6	0	0.0
A	ROCKWOOD COMPUTER	2- 7	1 7/8	- 1/8	-6.2
O	SYSTEMS CAPITAL	3- 20	9	+ 1/8	+1.4
N	U.S. LEASING	19- 35	26 1/2	-2 1/2	-8.6

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

WANGCO
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.91	.....
Revenue	4,599,279	$1,597,997
Disc Op	(25,829)	(43,381)
Spec Cred	a205,000	.....
Earnings	$10,973	(84,457)

a-Tax credit less loss related to discontinuance of subsidiary.

GRAHAM MAGNETICS
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.60	$.97
Revenue	5,366,955	4,431,087
Spec Cred	.....	a189,400
Earnings	549,379	488,400

a-Tax loss carryforward.

WANG LABORATORIES
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.21	$.14
Revenue	12,089,939	8,505,854
Earnings	835,381	555,721
6 Mo Shr	.18	.28
Revenue	20,074,340	16,358,808
Earnings	718,755	1,113,716

COMPUTER SCIENCES
Three Months Ended Dec. 29

	1972	a1971
Shr Ernd	.....	$.09
Revenue	$35,811,000	30,566,000
Earnings	(277,000)	1,154,000
9 Mo Shr	.....	.26
Revenue	101,378,000	b96,510,000
Earnings	(2,080,000)	3,489,000

a-Restated to reflect the effect of equity accounting for affiliates.
b-Includes $7.2 million from sale of the company's remaining 38% interest in Computax Services Inc.

BRANDON APPLIED SYSTEMS
Six Months Ended Aug. 31

	a1972	a1971
Shr Ernd	$.03	$.01
Revenue	1,275,179	977,095
Earnings	193,692	39,149

a-Includes results of Rand Teleprocessing Inc.

PERTEC
Three Months Ended Dec. 29

	1972	1971
Shr Ernd	$.09	$.19
Revenue	5,976,000	6,113,000
Spec Chg	a80,000	.....
Earnings	193,000	570,000
6 Mo Shr	.21	.38
Revenue	11,921,000	11,714,000
Spec Chg	a90,000	.....
Earnings	947,000	1,174,000

a-Expenses in connection with proxy contest.

DIGITAL EQUIPMENT
Three Months Ended Dec. 30

	1972	1971
Shr Ernd	$.42	$.35
Revenue	60,032,000	44,936,000
Earnings	4,601,000	3,648,000
6 Mo Shr	.75	.64
Revenue	111,773,000	83,349,000
Earnings	9,028,000	6,588,000

BOLT BERANEK & NEWMAN
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.22	$.16
Revenue	5,398,400	4,936,500
Spec Cred	a19,500	.....
Earnings	271,900	189,900
6 Mo Shr	.40	.30
Revenue	10,514,600	9,125,100
Spec Cred	a19,500	.....
Earnings	502,400	360,900

a-Gain from sale of minority interest in consulting company.

Many things we finance are even electric.

(LIKE DATA PROCESSING EQUIPMENT)

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